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NARRATIVE

OF AN

EXPEDITION TO THE POLAR SEA,

IN THE YEARS 1820, 1821, 1822, AND 1823

COMMANDED BY LIEUTENANT, NOW

ADMIRAL FERDINAND WRANGELL,

OF THE RUSSIAN IMPERIAL NAVY.

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PUBLISHERS' ADVERTISEMENT.

The recent voyages to discover a Northwest Passage, persevered in through a series of years, and crowned with partial success, have, from the boldness of the enterprise, as well as the skill and courage displayed by the successive navigators, excited a far more lively interest than any others in modern times. But while the British have been thus actively engaged in exploring the Polar Sea north of the American Continent, the Russians have not been idle in attempting to extend their geographical knowledge in the same latitudes north of Siberia. Of the former we have been long since fully informed; of the latter, until now, entirely ignorant. This volume, therefore, the publishers feel persuaded will be in the highest degree interesting to the American reader, from the great amount of curious information it contains, and especially from the manner in which the different expeditions were conducted, by means of sledges, drawn by dogs, over the ice of the Polar Sea.

The English copy, from which this is taken, was

edited by Major Sabine, whose extensive personal knowledge of the Polar Regions peculiarly qualified him for the task.

The work, as now presented to the public, has been carefully revised by the American editor, and considerably abridged, by the exclusion of most of the introductory matter, as well as of two chapters that have no connexion with the general narrative, and all of which consist of little more than minute topographical and other details, destitute of interest to the general reader.

H. & B.

New-York, Sept., 1841.

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PREFACE.

THE work, of which the present is a translation, was drawn up in the German language by M. Engelhardt, from the journals and papers of M. Wrangell, and of the other officers of the expedition, placed in his hands for that purpose, and was published at Berlin in July, 1839, under the editorial care of Professor Ritter, with the sanction of M. Wrangell, who himself communicated the map which accompanied the publication. Notices had been previously given by Professor Parrot in regard to some of the physical observations which were made in the course of the expedition, but no general account of its proceedings appeared until this of 1839, either in the Russian or any other language.

The German orthography of the proper names has been generally retained. Great part of the names being new, and their pronunciation only known approximately through the medium of a representation by German letters, it did not appear that any adequate advantage would have been gained by an attempt to substitute letters with English values, involving, as it must necessarily have done, an additional degree of uncertainty. The temperatures have been changed from Réaumur to Fahrenheit's scale. Distances, weights, and prices have been preserved in the original expressions, in wersts, poods, and roubles. The

dates are in the "old style," which is still in use in Russia, and twelve days are to be added, to give the corresponding dates in the style adopted by other European nations; thus Newyear's day in this volume is our 13th of January, and so forth.

The facts and circumstances made known by an expedition which was engaged during three years in geographical researches, extending over fifty degrees of longitude of the coasts of the Polar Sea, must in many instances bear, by a close analogy, on reasonings connected with the yet unexplored portion of the Artic Circle; and they do so particularly in respect to that part which has been, and still continues to be, the theatre of British enterprise.

There is a striking resemblance in the configuration of the northern coasts of the continents of Asia and America for several hundred miles on either side of Behring's Straits: the general direction of the coast is the same on both continents, the latitude is nearly the same, and each has its attendant group of islands to the north; the Asiatic continent, those usually known as the New-Siberian Islands, and the American, those called by Sir Edward Parry the North Georgian Group, and since fitly named, from their discoverer, the Parry Islands. The resemblance includes the islands also, both in general character and in latitude.

With so decided a similarity in the configuration and position of the land and sea, it is reasonable to expect that there should be a corresponding resemblance in the state and circumstances of the ice by which the navigation of the ocean may be affected.

In perusing M. Wrangell's description of that portion of the sea which is comprised between the Asiatic Continent and the New-Siberian Islands, those who have had personal experience of the corresponding portion of the sea on the American side, namely, of the portion included between the continent and the Parry Islands, must at once recognise the close resemblance which the ice described by M. Wrangell bears to that which fell under their own observation. In both cases, in summer, a narrow strip of open water exists between the shore and the ice, admitting of the occasional passage of a vessel from point to point, subject to frequent interruptions from the closing of the ice on the land by certain winds, and from difficulties at projecting capes and headlands. The main body of the ice by which the sea is covered is at that season broken into fields and floes of various extent and size, with lanes of open water between them; and in this state they remain till the first frost of autumn, when the whole is cemented into a firm and connected mass, and remains so during the winter.

The thickness of ice formed in a single season M. Wrangell states to be about nine and a half feet; that, if prevented from drifting away during the summer, a second season will add about five feet; and a third season, doubtless, somewhat more. The fields of ice which have been met with by the British expeditions in parts of the sea which are known to be cleared every year (in Baffin's Bay and Hudson's Straits, for example, and to the north and west of Spitzbergen), have usually been from nine to ten feet thick; but I well remember

the surprise excited in the expedition which penetrated to Melville Island, at the extraordinary and unprecedented thickness of the field-ice which they encountered after passing Barrow Strait, and entering, for the first time, the portion of the sea comprised between the continent and the islands north of it; evidencing that on that portion of the sea the icy covering remains for successive years. The general thickness was more than double that of the formation of a single year.

All the attempts to effect a northwest passage since Barrow Strait was first passed in 1819, have consisted in endeavouring to force a vessel, by one route or another, through this land-locked and ice-encumbered portion of the Polar Ocean. No examination has made known what may be the state of the sea to the north of the Parry Islands; whether similar impediments there present themselves to navigation, or whether a sea may not there exist, offering no difficulties whatsoever of the kind, as M. Wrangell has shown to be the case to the north of the Siberian Islands, and as by strict analogy we should be justified in expecting, unless, indeed, there should be other land to the north of the Parry group, making that portion of the ocean also a land-locked sea.

The expeditions of MM. Wrangell and Anjou were undertaken on the presumption of the continuance to the north (in the winter and spring at least) of the natural bridge of ice by which the islands are accessible from the continent; but every attempt which they made to proceed to the north, repeated as these were during three years, and from many different points of a line extending for

several hundred miles in an east and west direction, terminated alike in conducting them to an open and navigable sea.

Setting aside, then, the possibility of the existence of an unknown land, the probability of an open sea existing to the north of the Parry Islands, and communicating with Behring's Straits, appears to rest on strict analogical reasoning. The distance of either group to Behring's Straits is nearly the same.

It can scarcely be doubted, therefore, that by calling again into action the energy and the other admirable qualities which have been fostered and displayed in the Arctic voyages, and by persevering through a succession of seasons, a vessel might be forced from the Atlantic to the Pacific through that confined and encumbered portion of the sea in which all the recent attempts have been made.

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INTRODUCTION.

THE whole of the immense extent of country from the White Sea to Behring's Straits, embracing 145 degrees of longitude along the coast of Asia and Europe, has been discovered, surveyed, and described by Russians. All the attempts of other maritime nations to find a passage by the Polar Sea from Europe to China, or from the Pacific into the Atlantic, have been limited, in the West by the Karskoie Sea, and in the East by the meridian of Cape North. The impediments which arrested the progress of others have been conquered by Russians, accustomed to the severity of the climate, and to the privations inseparable from it.

The first voyages to these icy deserts were undertaken by private individuals, attracted by the hope of large profits from a trade in the costly furs of the animals with which these regions abound.* At a later period armed expeditions were sent out by the government, sometimes by land, and some-

* "These skins," observes the "Sibirskoi Vestnik," "were the golden fleece of those days and of those regions, and tempted not only Cossacks and fur-hunters to brave the severest hardships, but even induced persons of much higher rank to leave their families and abandon the conveniences of life, in order to plunge into the fearful and unknown wildernesses of Siberia, in the hope of enriching themselves by this trade. It is to the credit of the national character, however, that their desire of gain never drove them to the atrocities of which the gold-seeking conquerors of Peru and Mexico were guilty."

times by sea in large flatboats, which, creeping along the coast, reduced the tribes residing there, one after another, to Russian subjection. Still later, scientific expeditions were fitted out at a considerable expense, the sole object of which was to make an accurate survey of the countries already visited, and to discover others.

Few of these surveys, however, afforded any really satisfactory result, so far as geography and hydrography are concerned. The different maps vary from each other, as to the position of the most important points, by more than a degree and a half of latitude. Above all, the whole coast from Cape Schelagskoj to Cape North remained entirely unknown, and the account of Deshnew's voyage from the Kolyma through Behring Straits was so vague and obscure, that the English admiral, Burney, founded on it his well-known hypothesis of an isthmus existing somewhere near Cape Schelagskoi, by which he supposed the continents of Asia and America to be united. Lastly, the tales of Andrejew, but more particularly Sannikow's assertion respecting a large country to the north of Kotelnoi and New-Siberia, found many adherents in modern times, so that the geography of this portion of the Russian empire remained in complete obscurity, while, on the other hand, the memorable researches of Parry and Franklin had led to the most exact examination and description of the northern coast of America.*

To remove this blank in the geography of his

* See Narrative of Discovery and Adventure in the Polar Seas and Regions, 67, and Parry's Voyages, 100, 101, Harpers' Family Library.—*Am. Ed.*

country, the Emperor Alexander ordered two expeditions to be fitted out, each under the command of an officer of the imperial navy, with a view to an accurate survey of the northwest coast of Siberia between the Jana and the Kolyma, and as far as the Schelagskoi Noss, and to a minute examination of the islands situated in the Arctic Ocean.

The Navy Department accordingly equipped two expeditions for these objects in 1820, which were to proceed by land to the northern coast of Siberia. A lieutenant of the navy was placed at the head of each, to be accompanied by two junior officers, a medical officer, who was also to be a naturalist, and two sailors. One of these expeditions, under Lieutenant Anjou, was to commence its operations from the mouth of the Jana; the other, under my command, from the mouth of the Kolyma. My companions were Midshipman (now Captain-lieutenant) Matiuschkin, the mate Kosmin, Dr. Kyber, and two seamen, one of whom was a smith, the other a carpenter.

In regard to the objects of this expedition, and the means for accomplishing them, the instructions given by the Admiralty Department say: "From the journals and reports of all expeditions hitherto undertaken to the Polar Ocean, it appears that it is impossible to navigate it for scientific purposes even in summer, owing to the presence of immense quantities of drift-ice. On the other hand, it is known that Sergeant Andrejew drove over the ice in the spring of 1763 with sledges; and the same was done by Messrs. Hedenström and Pschenizyn in 1809, 1810, and 1811, when the former surveyed the Bear Islands, and the latter the Lächow Isl-

ands and New-Siberia. As this appears to be the only practical plan for the execution of his imperial majesty's desire, its adoption has been resolved on by the department of the admiralty with respect to the exploring expedition now to be sent. Accordingly, the first division of that expedition is directed to proceed in sledges to survey the coast eastward from the mouth of the Kolyma as far as Cape Schelagskoj, and from thence to proceed in a northerly direction, in order to ascertain whether an inhabited country exists in that quarter, as asserted by the Tschuktschi and others."

Such, no doubt, was the only practicable plan, namely, to undertake the contemplated journey with sledges drawn by dogs. But to procure this first requisite, and to collect the necessary supplies, was a task attended by so many difficulties in the inhospitable and uninhabited deserts of Northeastern Siberia, that it would have been impossible to overcome them without the co-operation of the public officers in that country. It was therefore fortunate for us that the arrangement of everything relating to our expedition had been confided to Privy-councillor Speranski, at that time governor-general of Siberia, who promoted it in the most active manner, and by whose judicious measures and kind anticipation of our most minute wants we were happily enabled to execute the task assigned to us.

In publishing this narrative I have had no other object in view than to extend the geographical knowledge of those regions, to correct previously-existing errors, and, by a plain statement of what we ourselves have done, to make our experience

useful to those who may come after us. With these views, I have ventured to be rather diffuse in the description of particular circumstances and events connected with our journey when they happened to bear directly upon the objects of our mission. In all that relates to the natural history and physical characteristics of the country, I have adhered, for the most part, to the observations of Dr. Kyber, who accompanied me as naturalist.

NARRATIVE OF AN EXPEDITION

TO

SIBERIA AND THE POLAR SEA.

CHAPTER I.

Departure from St. Petersburgh.—Arrival at Irkuzk.—Passage down the Lena.—Account of Scenery, Navigation, &c.—Arrival at Jakuzk.—Annual Fair at Jakuzk.—Character and Customs of the Inhabitants.—Departure for Nishne Kolymsk.

Both divisions of our expedition left St. Petersburgh on the 23d of March, 1820. In Moscow I parted from the commander of the second division, Lieutenant Anjou, who waited there to obtain better means of transport for our instruments. The pilot Kosmin remained with him to take charge of the instruments belonging to our division. Meanwhile, accompanied by M. Matiuschkin (midshipman), I hastened to Irkuzk, that no time might be lost in setting on foot the necessary preparations for the mission with which I was charged. To make our journey as rapid as possible, we took with us only two small portmanteaus for our clothes, &c., and travelled by the ordinary post in the little carriages called *telegi*, which are changed at every station, and are adapted in every case to the nature of the road.

The overflowing of many of the rivers on either side of the Ural Chain impeded our journey, but made us amends by the variety which was thus given to the landscape; the valleys being all changed

into lakes, and the rising grounds forming green islands. On the road from Moscow to Irkuzk, which is 5317 wersts* in length, we experienced repeated alternations of spring and winter. At Kasan the trees were green and the meadows full of flowers, while in the Ural Chain, the summits of the mountains, and the narrow ravines which were shaded from the sun, were covered with snow. Though at Tobolsk the grass was only just beginning to appear in the pastures, the romantic Krasnojarsk showed all the luxuriance of spring, and the gardens at Irkuzk were in full flower. The rapidity of our journey placed every contrast in the most striking light. We passed in a few days from the magnificent palaces of St. Petersburgh and Moscow to the huts of the wandering Tungusi; from the vast oak and lime-tree forests of Kasan, to the desert and snow-covered banks of the Alasej and the Kolyma.

After crossing the Ural Chain, which is here well named the "Stony Girdle," and entering Siberia Proper, we were agreeably surprised by the kind manners of the inhabitants, who spared no pains to enable us to prosecute our journey with the least possible delay. Whether by day or by night, our things might be safely left unwatched on the high road while we were changing carriages; and if we expressed uneasiness about them, the answer was always "*Neboss*, never fear: nothing is stolen here." Those whose ideas of Siberia are associated with criminals and exiles inhabiting a cold and desolate wilderness, would find instead, in this southern part at least, luxuriant vegetation, carefully-cultivated fields, excellent roads, large well-built villages, and general security and comfort.

On the 18th of May we reached Irkuzk, and alight-

* A werst is about two thirds of a statute mile; or, to speak more exactly, 104 wersts are equal to 60 geographical miles.—*Am. Ed.*

ed at the house of M. Kotygin, whose hospitality I shared during the month of my stay there. I immediately announced myself to the governor-general of Siberia, M. Speranski, by whose kindness and support I was speedily enabled to complete the arrangements for our ulterior proceedings. He showed me the correspondence which he had had with the authorities of the different provinces through which we were to pass on the subject of our expedition, in order that I might point out to him anything which might still be wanting. M. Hedenström,* who had visited the coast and islands of the Polar Sea in 1811, came, at the request of the governor-general, to meet me at Irkuzk, and his conversation and manuscripts afforded me most valuable information.

Early in June, Lieutenant Anjou and the other members of the expedition arrived at Irkuzk with the instruments; and on the 25th of June we left the capital of Siberia, full of gratitude for the kindness, friendship, and sympathy we had enjoyed there, which we prized the more, as we were now to take our leave of the civilized world, and of all the enjoyments of social life.

On the 27th of June we arrived at the village of Kotschuga, 236 wersts from Irkuzk, situated on the left bank of the Lena, which is navigable from thence. We found here a large flat-bottomed decked boat, which we loaded with the provisions which had been collected by the orders of the admiralty at Irkuzk, and on the evening of the 28th of June we began to descend this majestic river.

Kotschuga is a kind of *entrepôt* for all goods which are to be conveyed by water to towns or places near the Lena. They are sent partly in large heavily-

* M. Hedenström was engaged in examining the coasts of Siberia and exploring the country from 1809 to 1811 inclusive. —*Am. Ed.*

laden barks, which are broken up for building materials or for firewood on their arrival at Jakuzk, as they are too unwieldy to return against the stream, and partly in smaller boats, which can be rowed or towed up the river again: there are also a few good-sized decked boats, with sails.

Travellers with but little luggage make use of small light boats, which always keep near the windward bank for safety. The traveller is entitled to demand at every post station as many rowers as there are horses marked on his travelling pass.* In this way he gets on without interruption, and speedily, especially if he is going down the stream.

These are as yet the only provisions made for an internal navigation, which is of the highest importance in a country like Siberia, where the settlements are often many hundred wersts apart, and where the northern districts have to depend for the necessaries of life on the cultivated provinces of the south. Few countries in the world are favoured with such extensive water-communication as Siberia. The great rivers flowing into the Polar Ocean seem intended by nature to convey the superfluities of the South to the inhabitants of the barren North; and the country, in addition to this, is so intersected by navigable streams, that there is scarcely a point of any importance which cannot be reached by wa-

* No person can travel in Russia without a pass or permission from the proper authorities; and this paper, which the traveller takes with him, mentions the number of horses to which he is entitled, and requires the postmasters at the different stopping stations to furnish them; the rate at which they are to be paid for being also stated in the pass. This, indeed, is the common mode of travelling in most of the countries on the Continent of Europe; travellers providing themselves with their own conveyances, and obtaining relays of horses in this way on the road. In 1823, however, a line of stage-coaches (*diligences*) was established between St. Petersburgh and Moscow; and this more cheap and convenient mode of travelling has been since adopted on other principal routes.—*Am. Ed.*

ter. Some meal, salt, tea, sugar, brandy, tobacco, and a few cloth stuffs are, indeed, sent in boats from the yearly fair at Jakuzk to Shigansk, and other places on the Lower Lena; but from the imperfection of the boats, and the want of hands properly to man them, the passage is often so long that winter comes on before they arrive at their destination. They have then to wait till spring; and, although some of the most indispensable articles may be sent on by land, this enhances the price so enormously, that very few are transported in that way. The arrival of these stores is a subject of painful anxiety to the inhabitants, and their non-arrival is often the cause of severe and general sickness. The goods which remain behind are sure to be more or less injured; and the custody of them during the winter is a heavy charge upon the settlers on the banks of the river, who are held responsible for whatever belongs to the crown.

All these serious disadvantages might be obviated by the employment of a steamer, with the assistance of which vessels could reach the most distant places on the Lower Lena in a month from Kotschuga, and thus the passage could be made twice in the course of the summer. In this way the whole district between Irkuzk and the sea, about 4000 wersts in extent, would receive new life, industry would be encouraged, and severe suffering and privation averted; while the forests on the banks of the Upper Lena offer inexhaustible stores of cheap and easily accessible fuel, the preparation of which would afford additional employment and profit to the natives.*

* It is a singular fact, that, notwithstanding the immense facilities which Russia possesses for internal steam navigation, there is not, or was not a very few years ago (and it is believed that but little change in this particular has taken place since), a single steamer on any of her great rivers, except a small one on the Volga. This is owing in part, no doubt, to want of en-

But to return to our own navigation. With the occasional assistance of sails or oars, our boat glided rapidly down the stream, between high and romantic banks. The Lena is one of the largest rivers in the world: from Kotschuga to Rigi, a distance of 400 wersts, the country is mountainous and covered with impenetrable forests, and the banks on either side present a succession of picturesque and varied views of great beauty. On the slopes of the hills we saw cultivated fields, pasture-grounds, and vegetable-gardens surrounding the cottages of the peasants, which sometimes stood singly, and sometimes formed little villages.

There are many wooded islands in the bed of the river. The banks became steeper and the mountains more lofty as we approached Rigi, where the river makes a sudden bend to the east; the mountains closing in upon it, and appearing to divert it from its course. Lower down it escapes from the hills, and flows on in a broader stream, between flat banks. Below Rigi there are a few shallows which in some degree impede the navigation when the water is low; but after these are past, the flat vessels in common use meet with no impediment throughout the remainder of their passage. The first permanent winter-habitation of the Russians on the banks of the Lena was built in 1631, at the mouth of the Kuta, a tributary stream from the west. The Lena was first discovered by the Turuchanschi in 1607, and afterward by Cossacks from the Jenissei in 1628.*

terprise; partly, also, to the jealous character of the government; but more than all to the numberless annoyances which individuals undertaking anything of the kind experience from the local authorities, in the shape of interference, delays, bribes, &c.—*Am. Ed.*

* The Cossacks were the conquerors of Siberia, and the discovery of this river greatly assisted them in the subjugation of the country.—*Am. Ed.*

Between Saborje and Kirensk the river winds so much that the distance by water is 105 wersts, while in a straight line it is only thirty-five. It is here seven fathoms deep, and has scarcely any current. At Kirensk the left bank consists of black slate rocks, with some talc. A few wersts below I saw strata of chloride slate, in red clay. About 100 wersts farther down, the right bank consists of common clay and imperfect slate. . At Schtscheki, 250 wersts beyond Kirensk, the rocks on the left bank are limestone, interspersed with veins of flint and calcareous spar. The banks become low and flat 350 wersts above Olekma. Here there are a quantity of fragments of green-stone porphyry, common quartz with mica, and much mica-slate. About 150 wersts from Olekma, the left bank, which is high, consists of layers of different coloured slate, the green layers being thick, and the intervening gray layers very thin; and occasionally I saw small veins of gypsum interspersed. At Olekma, the left bank consists entirely of clay, with rather thick layers of gray slate, and a beautiful dazzling white gypsum. About 180 wersts above Jakuzk, the right bank of the river is formed of perpendicular rocks, which from their form are called *Stolby*, or the pillars; and there are here several kinds of marble. About sixty wersts below Stolby there are many excavations in the bluff limestone rocks, the remains, probably, of former attempts to discover silver ore. Dr. Kyber saw in one of these caves a larch-tree growing from the rocky floor, at the depth of several fathoms, and flourishing in spite of the constant darkness. To these scanty notices concerning the banks of the Lena I may add the mention of two mineral springs on opposite sides, 150 wersts below Stolby. The one on the left bank issues from a steep limestone rock, and has a sulphurous smell and a high temperature; the other, on the low bank opposite, is cold, very clear, and has a strong taste of salt.

The town of Kirensk is a poor little village, chiefly deserving of notice for the success of the inhabitants in cultivating vegetables. They send to Jakuzk cabbages, potatoes, turnips, and sometimes even cucumbers. The gardens are all so placed as to be sheltered from the north and east by hills, rocks, or woods.

About 250 wersts below Kirensk, the Lena passes between precipitous rocks nearly 500 feet high: the depth of the river in this part is twelve fathoms. This place is remarkable for an echo, which repeats the report of a pistol-shot at least a hundred times, the sound increasing in intensity so as to resemble a well-sustained running fire of musketry, or even a cannonade. They told us here the story of a hunter, who on his snow-shoes had pursued an elk to the edge of the precipice; and, in the ardour of the chase, both man and beast had been precipitated on the ice of the river, eighty fathoms below. Near this place we passed a steep rock in the bed of the stream, where a bark laden with brandy* had been wrecked some time before: it is a little above the mouth of the Witima, which is celebrated for the quantity of talc found on its banks, and still more for its beautiful sables, which are esteemed the finest in all Siberia after those of Olekma. The forests on the right bank of the Lena are rich in fur-animals of all kinds, and the furs are remarkably fine; whereas on the left bank the skins are of an inferior quality, as well as much more scarce. This, indeed, might be expected, as the vast woods which cover the right bank of the river are connected with the forests of the Jablonnoj Stanowoj Chrebet,† into which the most adventurous fur-hunters have not

* That is, the common spirituous liquor of the country, distilled from rye, and called by the Russians *watka*.—*Am. Ed.*

† This is the name of the chain of mountains which extends southward on the east side of the Lena, and connects itself with the Baikal chain.

yet penetrated; while the left bank is more lightly wooded and better inhabited.

On the 9th of June we found ourselves opposite the town of Olekma.* Here we had heavy rain, and so violent a wind setting against the stream as completely to stop our progress. We had recourse, therefore, to an expedient commonly resorted to here in such cases, and which succeeded perfectly well. We bound four larch-trees together in a row, and, by attaching stones to them, suspended them about a fathom under water, their tops being downward, and their roots attached by cords to the forepart of our vessel. As the wind had no effect on the water at that depth, the under current, acting on this kind of subaqueous sail, impelled us forward, in spite of the opposition encountered at the surface.

As we continued our voyage, we saw large tracts of forest burning, notwithstanding the heavy rain. The bushes and dry underwood were for the most part already consumed. The giant pines and larches still stood enveloped in flames, offering a magnificent spectacle, especially at night, when the red flames were reflected by the waves of the Lena, and nothing was heard but the loud crackling of the huge resinous trees. The forest-conflagrations often des-

* The sables of Olekma are the best in Siberia: from 50 to 100 roubles* a piece, and even more, are sometimes given here for skins of remarkable beauty. Those which have a bluish cast are the most prized. The squirrel skins of this district, which are distinguished for their very long, thick, dark-grey hair, are also much sought after, and fetch a high price. Olekma is therefore a place of importance on account of its fur-trade. It may moreover be regarded as the limit of grain-cultivation in Siberia: none grows to the north of Olekma, and the winter rye, which is the only grain cultivated at this place, not unfrequently fails.

* The paper rouble is here meant, the value of which is about 20 cents: the Russian silver rouble is worth about 77 cents. The currency of the country consists, for the most part, of paper, and it is this currency which is referred to throughout the volume.—*Am. Ed.*

olate hundreds of wersts, and almost always originate in the carelessness of hunters or travellers, who neglect to extinguish the fires which they have lighted to dress their food, or to drive away the clouds of moschetoes which darken the air, and are an almost insupportable torment. Besides the destruction of the trees, these fires have the farther bad effect of driving the fur-animals and game of all kinds to more remote and undisturbed districts. Still the hunters, who are the greatest losers, are not cured of this ruinous carelessness.

The farther north we proceeded, the more desolate the shores of the river became in every respect. We had seen at Olekma the last traces of either field or garden cultivation: beyond it the natives subsist entirely on the produce of their cattle, and by hunting and fishing. There are scarcely any settlements except the post-stations, and the few inhabitants appear to be miserably off. Those who came to us were in rags, and bowed down by want and sickness. This is especially the case with the Russian settlers, who are found as far north as within fifty wersts of Jakuzk. Beyond this the population consists entirely of Jakuti, who, as the true aborigines, know how to encounter the climate better, and suffer less from its severity and privations.

After sticking fast one whole night on a sand-bank, we landed at Jakuzk on the 25th of July, having been twenty-five days in making the passage from Kotschuga, a distance of 2500 wersts. In the spring, when the current is more rapid, and contrary winds are rare, this voyage does not occupy more than thirteen or fourteen days.

At Jakuzk we were most kindly received by the commandant, M. Minizkoj, in whose house M. Anjou and myself remained during our stay. We were indebted to him for much valuable information and advice relative to our journeying in Siberia, which he has thoroughly studied during a residence there

of many years, and by actually travelling through most parts of it. The whole time that the expedition remained in the province under his command, his watchful care and assistance were of essential service in supplying its wants, in a country so deficient in resources, and doubtless contributed essentially to the success of the enterprise.

Jakuzk has all the character of the cold and gloomy north. It is situated on a barren flat, near the river. The streets are wide, but the houses and cottages have a mean aspect, and are surrounded by tall wooden fences. Among so many dry boards there is not a green tree or bush to be seen: nothing to tell of summer except the absence of snow, and this may be considered, perhaps, rather a disadvantage in point of appearance.

The town has 4000 inhabitants. It consists of about 500 houses, five churches (three built of stone and two of wood), and a convent. A stone building for commercial purposes has recently been erected. The only relic of antiquity is an old wooden fortress or *ostrog*, with its ruined tower, which was built in 1647 by the conquerors of Siberia, the Cossacks. The inhabitants look with no little satisfaction on this monument of the exploits of their ancestors, and are, in general, proud and fond of their native city, whatever strangers may think of it. The town has undergone great improvements in the last thirty years. The Jakutian *jurti*, which Captain Billings* saw here in 1793, have been replaced by substantial dwellings; the windows of ice or of talc have given way to glass in the better class of houses, and the more wealthy inhabitants begin to have higher rooms, larger windows, double doors, &c. These are signs of increasing prosperity, under the

* This officer was sent by the Russian government with two small vessels, in 1787, to explore the coast of Siberia, and to attempt a passage to the Pacific through Behring's Straits.—*Am. Ed.*

wise and fostering care of the excellent governor of the province.

Jakuzk is the centre of the interior trade of Siberia. All the most costly furs, as well as the more common kinds, walrus teeth, and mammoth bones, those curious remains of an earlier world, are brought here for sale or barter during the ten weeks of summer, from Anabor and Behring's Straits, from the coasts of the Polar Sea, from the mountains near Olekma, from the Aldan and from Udsk, and even from Ochozk and Kamtschatka. It is not easy to imagine the mountain-like piles of furs of all kinds, the value of which often exceeds two and a half millions of roubles.*

As soon as the Lena is clear of ice, the merchants begin to arrive from Irkuzk, bringing with them for barter corn, meal, the pungent Circassian tobacco, tea, sugar, brandy and rum, Chinese cotton and silk stuffs, yarn, cloth of an inferior quality, hardware, glass, &c.

At the annual fair of Jakuzk one sees none of the popular amusements common at fairs in Europe: there is not even the appearance of animation and bustle which might naturally be expected. The goods are not openly exposed for sale, and most of the purchases are effected in the houses or enclosures of the citizens. The strangers generally seek to

* The sorting of the sables is a business requiring very great experience and skill. They are classed according to the fulness and length of the fur; its colour, not only at the tip, but also near the root; and the thickness of the skin. All these qualities must be combined in a high degree of perfection in order to form a good assortment. It is often necessary to examine more than a thousand skins to select a sufficient number for one good tippet. The tails, paws, and light-coloured parts of the skins are sewed together and sold separately.*

* The smallest clippings or pieces of the fur are thus preserved, and it is not extravagant to say, that several thousand of these small patches may be counted in a single robe; that is, a piece of fur sufficiently large to line an outside winter garment.—*Am. Ed.*

conceal from each other the particulars of their dealings, which are almost exclusively with the inhabitants, they scarcely ever having any transactions with one another. Almost all the Russian settlers in Jakuzk employ their little capital in purchasing, in small parcels from the Jakuti during the winter, a collection of furs, on which they realize a good profit at the fair. The Russians live entirely by trade, having abandoned all sorts of handicraft to the aboriginal Jakuti, among whom there are now excellent carpenters, cabinet-makers, carvers in wood, and even painters. The pictures of saints, and the carving and interior fittings in the new church at Jakuzk, are all by Jakuti, and are neatly executed.

The inhabitants are far from being in an advanced state of intellectual cultivation; books are extremely rare, and education is but little thought of, the children usually passing the first years of their infancy with a Jakuti nurse, from whom they learn so much of her native language that I often found the conversation of persons in the best society very difficult to understand. As the children grow up, they learn a little reading and writing from the priests. After this they are gradually initiated into the mysteries of the Siberian fur-trade, or obtain places under government. Their hospitality is proverbial; but as there are usually but few strangers, they can, for the most part, only exercise it towards each other. They pass much of their superabundant leisure in somewhat noisy assemblages, where eating and drinking play a most important part. After dinner, which is a very substantial meal, and at which *nalivki* (a kind of liqueur made of brandy, berries, and sugar) is not spared, the elderly gentlemen pass the remainder of the day with cards and punch, the ladies gather round the tea-table, and the young people dance to the sound of a kind of harp with metal strings, which is the only instrument they possess. I have heard some of the old people

lament that the love of play, dress, and expense have increased so much of late that many families have been completely ruined by it. My stay, however, was not sufficiently long to enable me to judge how much of this complaint was to be ascribed to the disposition so natural to the aged, to regard the time of their youth as the good old time, and the present age as greatly degenerated from it.

By the aid of M. Minizkoj's exertions we were enabled to resume our journey before the close of the summer. Early in August Lieutenant Anjou descended the Lena with his division of the expedition; about the same time I sent M. Matiuschkin forward to Nishne Kolymsk to prepare for our reception; and, as soon as the morasses and rivers were frozen, the stores for our use were despatched under the charge of M. Kosmin. My own departure for Kolymsk took place on the 12th of September.

CHAPTER II.

Departure for Nishne Kolymsk.—Pack-horses.—First Bivouac.—The Jakuti.—Jakutian Settlement.—Mioro.—Jurti, Clothing, Customs, Songs, Food, Villages, National Characteristics.—The River Aldan.—The River Tukulan.—Forest Bivouac.—Werchow Mountains.—Wandering Tungusi.—Baralow and Tabolog Stations.—Saschsiwersk.—Inhabitants of the District.—The River Alaseja.—The Sardach Station.—Sredne Kolymsk.—Winter Travelling Costume.—The Omolon River.—Dogs and Sledges.—Arrival at Nishne Kolymsk.

Regular travelling ends at Jakuzk, as from thence to Kolymsk, and generally throughout Northern Siberia, there are no beaten roads. The utmost that can be looked for are foot or horse tracks leading through morasses and tangled forests, and over rocks

and mountains. Travellers proceed on horseback through the hilly country, and on reaching the plains use sledges drawn either by reindeer or dogs.

On what is called the Jakuzk road, which crosses from the right bank of the Lena to the Aldan, there are post-stations for changing horses at a distance of from fifteen to forty wersts. In summer travelling is almost exclusively by water. I began my journey by crossing in a boat to the opposite side of the river, where we expected to find horses waiting for us. My companions were a sailor who had come with me from St. Petersburgh, and a retired sergeant from Jakuzk, who had been with M. Hedenström to the shores of the Polar Sea, and whose experience and ability were subsequently of great service to the expedition: he was also my interpreter. We had ordered thirteen horses, three for ourselves, and the remainder for our provisions, instruments, winter-clothing, and other necessaries.

When we landed at the post-station neither men nor horses were to be seen: this was a bad beginning, but the sergeant said it was a common occurrence, and that the Jakuti had probably taken their horses to a valley three wersts off, where there was better pasture. We sent the boatmen to look for them, and meanwhile lighted a good fire on the beach, and prepared some soup to fortify ourselves for the journey. The weather was raw and cold, and the country showed every symptom of approaching winter.

In three hours the men and horses arrived, and we commenced loading them: each horse carries about 5½ pood (220 Russian pounds), 2½ pood on each side, and half a pood on the back.* The animals are then fastened together in a string, the bridle of each being tied to the tail of the next. Our string of ten horses was managed by only two postillions,

* A pood is 40 Russian lbs., or 36 lbs. avoirdupois.—*Am. Ed.*

one riding the leading horse, and the other the hindmost one. These drivers have no easy task: the horses sometimes stick fast in the morasses, or stumble on the rocks and among the precipices, or break loose and try to roll off their burdens; and the men must be ever on the watch to remedy such disasters. Long practice, however, makes them so expert at this, that an experienced Jakut will sometimes take the sole charge of twenty-eight horses, and bring them in safe. In such case, of course, he has to be more on foot than on horseback.

As the party proceeded but slowly, I rode ahead with my two companions, and came to several little lakes swarming with wild-fowl, of which we soon shot several for our supper. At the close of the day we reached another post-station, where we were to pass the night. As the *jurte* was filled with men and cattle, I was glad to avoid the closeness and other inconveniences within, and passed a very comfortable night under the larch-trees, with my bearskin for a mattress, a covering of furs, and a bright blazing fire. The next morning being clear and frosty, 28° Fahrenheit felt rather cold in dressing, and I thought, with something of a shudder, of the approaching winter, when several degrees below freezing would be called by the natives warm weather. Man, however, is a creature formed for all climates, and necessity and resolution soon reconcile him to anything. Only a few weeks later, and I myself had learned to think eighteen or twenty degrees below the freezing point as quite mild.

Tea and soup being prepared, breakfast was eaten while the horses were loading, and we resumed our journey. Our way led over a hill covered with pines, and I noticed that several old trees near the path had tufts of horsehair fastened to their branches, and that a number of sticks were stuck in the ground near them. The leading postillion here got off his horse, plucked a few hairs from his mane, and

fastened them to one of the branches with much solemnity. He told us that this was a customary offering to the spirit of the mountain to obtain his protection during the journey, and that foot-passengers placed a stick in the ground with the same intention. This is a general practice among the Jakuti, and is even persevered in by many who have professed Christianity. My Jakuti sang almost incessantly. Their style of singing is monotonous, and rather melancholy, and is quite characteristic of this gloomy and superstitious people: their songs describe the beauties of the landscape in terms which appeared to me not a little exaggerated, and which I attributed at first to a poetic imagination; but my sergeant informed me it was customary thus to try to propitiate the spirit of the mountain by flattering encomiums on his territory.

We made this day sixty-three wersts with one change of horses. The *jurte* where we were to sleep had been so highly praised for its roominess, convenience, and, above all, its cleanliness, that I expected an excellent night's rest; but, though heavy rain obliged me to stay within it, I found in this, as in every other case, that one must be a native-born Jakut to find the atmosphere of such a place endurable.

We passed the next day numerous little lakes, which gave a peculiarly pleasing character to the landscape, from their regular oval form, their high wooded banks, and the mirror-like stillness of their sheltered waters, broken only by the plash of the startled wild-fowl. When we had gone about forty wersts, we came to the valley of Miörö or Mjure, which was one of the most interesting spots that I met with in my journey.

This valley has a tolerably regular oval form, and is eight wersts in diameter. It is entirely surrounded by a kind of wall, which is in some places ten fathoms high, and must have been at some former

period the bank of a considerable lake, now dry. There are, indeed, still in the lowest part of the valley some small but very deep lakes, abounding in fish. This, with its sheltered situation and luxuriant pasture, induced a rich Tungusian chief, named Miörö, to settle here with his tribe. They were subsequently, however, driven out by Jakuti who came from the south, but the valley still preserves the name. It is one of the most populous and flourishing settlements between the Lena and the Aldan. Numerous *jurti*, some approaching to the dimensions of Russian houses, two good churches with towers, the bustle of a considerable number of inhabitants, and large droves of cattle and horses, offered a striking contrast with the surrounding desert. This remarkable settlement owes much of its prosperity to the Jakutian *golowa* or superintendent, who has built and endowed the two churches at his own expense. Though his fortune, it is said, amounts to half a million of roubles, he has in no respect altered his original national customs. He lives in a *jurte*, warms himself by a true Jakutian *tschuwal* or open hearth, drinks his *kumys*,* eats horseflesh, and in everything but in his profession of the Christian religion, keeps close to the manners of his forefathers. The chief branches of industry in this place are the care of cattle, the chase, the fur-trade, and the breeding of horses.

I will notice here, in passing, a few of the principal characteristics of this people. Their countenance and language fully confirm the tradition of their Tartar descent.† They are properly a pasto-

* This well-known beverage, prepared from mares' milk, is made here in the same manner as in Tartary; only the Jakuti have happily not learned, like the Tartars, to make it intoxicating. It is an agreeable beverage, and so nourishing that a couple of large skins full of kumys, hung to the saddle, are often the only provisions taken for a foraging excursion of several days.

† According to this tradition, their ancestor was a Tartar

ral people, whose chief riches consist in the number of their horses and horned cattle, on the produce of which they subsist almost entirely. But the abundance of fur-animals in their vast forests, and the profit which they can make by selling their skins to the Russians, have turned much of their attention to the chase, of which they are often passionately fond, and which they follow with unwearied ardour and admirable skill. Accustomed from infancy to the privations incident to their severe climate, they disregard hardships of every kind. They appear absolutely insensible to cold, and their endurance of hunger is such as to be almost incredible.

Their food consists of sour cows' milk, mares' milk, of beef, and of horseflesh. They boil their meat, but never roast or bake it, and bread is unknown among them. Fat is their greatest delicacy, and they eat it in every possible shape; raw, melted, fresh, or spoiled. In general, indeed, they regard quantity more than quality in their food. They grate the inner bark of the larch, and sometimes of the fir, and mix it with fish, a little meal and milk, or, in preference, with fat, and make it into a sort of broth, which they consume in large quantities. They prepare from cows' milk what is called Jakutian butter, which is in reality more like cheese or curd, and has a sourish taste: it is not very rich, and is a very good article of food eaten alone.

Both men and women are passionately fond of smoking tobacco, preferring the most pungent kinds, especially the Circassian. They swallow the smoke, and it produces a kind of stupefaction closely resembling intoxication; and if provoked when in this state, the consequences are often dangerous. Bran-

named Sachalar, who came from his own country on the other side of the mountains to Kirenga on the Lena, where he settled and married a Tungusian woman; the Jakuti still call themselves Sachalary.

dy is also used, though the long inland carriage makes it extremely dear. The Russian traders konw how to avail themselves of these tastes in their traffic for furs.

The Jakutian habitations are of two kinds. In summer they dwell in what they call *urossy*, which are light circular tents formed of poles and covered with birch-bark, which they strip from the trees in large pieces. These are first softened by boiling, and then sewed together; and the outside of the *urossy*, from the colour of the bark being white, have a very pleasing appearance, and at a distance resemble large canvass tents. In the summer they wander about with these in search of the finest pastures; and while their cattle are feeding, they themselves are incessantly employed in collecting the requisite store of winter forage.

At the approach of that season they take possession of their warm *jurti*. These are cottages formed of thin boards in the shape of a truncated pyramid, and covered thickly on the outside with sticks, grass, and mud. A couple of small openings, which admit a scanty light, are closed in winter with plates of ice, and in summer with fish-membrane or oiled paper. The floor is generally of beaten mud, and is sunk two or three feet below the surface of the ground; but people in better circumstances have it raised and boarded. There are wide permanent benches round the walls, which serve for seats in the daytime, and for sleeping on at night; and they are generally partitioned off for this purpose, according to the number of occupants. In the middle, but rather nearest the door, is the *tschuwal*, a kind of open hearth with a chimney up to the roof, where a fire is constantly kept burning. Clothing, arms, and a few household articles hang round the walls, but in general the greatest disorder and want of cleanliness prevail.

Outside there are usually sheds for the cows,

which in winter are placed under cover and fed with hay, and in extreme cold weather are even brought into the *jurte*; whereas the horses are left to shift for themselves as well as they can, by scraping away the snow to get at the withered autumn grass. It is only when they are about to make a journey that they are given hay for a few days previously.

The above-described habitations, though rude, are better adapted to the wants of the people than those built after the Russian fashion, a few of which are to be seen. In the construction of the *jurti* small trees may be used instead of boards, which is a great convenience; while the open fire in the *tschuwal*, by keeping up a continual change of air, is far more conducive to health than the close stove.

Every tribe of Jakuti is divided into several *naslji*, each of which is under a *knäsez* or chief, by whom minor disputes, &c., are settled. More serious cases go before the *golowa* or superintendent of the whole tribe, who is elected from among the *knäsez*. The people often call in a *schaman* or conjuror, and have recourse to his incantations to recover a strayed cow, to cure a sick person, or to obtain good weather for a journey, &c., &c. The Jakuti have almost all been baptized; but, though a part of the New Testament, the Ten Commandments, and several of the canons of the Church, have been translated into their language, as yet the greater number have no idea of the principles and doctrines of Christianity; and their *schamans* and the superstitions of heathenism still retain their hold upon their minds. As a nation they are unsocial, litigious, and vindictive. An injury received by one of them is very rarely forgotten, and, if he cannot revenge it himself, he will leave the feud to his son. Their passion for litigation is excessive: they will frequently undertake difficult and expensive journeys, in a cause where perhaps the matter in dispute is not of the value of a rouble. Their unsocial dispo-

sition, which leads them to prefer settling by single families at a distance from each other, is strikingly contrasted with the cheerful and ready hospitality which they show to strangers. They very seldom settle in communities, and it is only along the route from Jakuzk to the Aldan, where the country is more populous, that such settlements are now and then to be met with; but beyond the Werchojansk chain, the solitary *jurti* are often hundreds of wersts apart, so that the nearest neighbours may not see each other for years. Such distances are far greater than can be required on account of pasture, and are rather to be ascribed to the disposition which leads them to seek solitude, and to avoid all social intercourse.

As soon as I had arrived at Miörö the *golowa* came to see me, accompanied by a *knäsez* and two clerks. They complained much of being oppressed by the Cossacks from Jakuzk. I tried to pacify them by telling them of the new regulations by which the Cossacks were to be given lands to cultivate, which it was to be hoped would put a stop to such irregularities. We resumed our journey on the 15th, and though the roads were bad, and the horses sank up to their necks at one place in a morass, accomplished ninety wersts, and slept at Aldanskaja, half a werst from the Aldan, which falls into the Lena ninety wersts farther on. There are no settlements between this place and Baralas, 400 wersts distant; the intervening tract being desert and mountainous, with many morasses, on which account travellers usually wait for dry or frosty weather to enable them to cross it. They also select the strongest horses they can procure, and take spare ones to replace those which may give out on the way. We were favoured by the weather, which was frosty, and were therefore detained only one day to procure the necessary provisions. The district we had traversed from the Lena to the Aldan is character-

ized by elevations forming parallel ridges like waves, from east to west. Between the hills there are numberless caldron-like hollows, forming marshy valleys on the north side, and lakes on the south side. The heights of land are generally well wooded with larch; the soil is clay mixed with sand; and the northern declivities appeared to me much steeper than the southern.

The Aldan is here one werst and a half in breadth: its current is rapid, and it flows in a westerly direction. We saw in the distance, on the north side of the river, a range of peaked mountains covered with snow.

On the 17th we were ferried across the river, with our horses and luggage, in a flat-bottomed boat, which sprung aleak when half way over; and, in spite of baling with caps and hats, we must have sunk but for a little island, on which we landed, and stopped the hole with dry moss and grass. That night we pitched our little travelling tent of tanned reindeer leather.

We proceeded, at break of day on the 18th, through a desert and marshy district, and, on coming to some tolerable pasture, it was thought advisable to halt, that the horses might avail themselves of it, as it was the last we should meet with for a considerable distance. Meanwhile, as the snow was falling fast, we were glad to cluster round a little fire under our tent, and enjoy a cup of tea, our chief refreshment. The next day was a laborious one: after crossing the marshes we had to make our way through a thick wood of larch, poplars, and willows, to the only spot where the Tukulan could be forded. We pitched our tent on its wild shores. Before us were the snowy mountains, behind us the forest, and the silence around was only broken by the loud rushing noise of the torrent. We crossed early in the morning of the 20th, the current being strong, and the water up to our saddles; but the

bottom was hard, and we got safely over, though thoroughly wetted. We had to pass other streams less broad, but equally rapid. The valley of one of these was so strewed with trunks of trees and masses of rock, brought down by the torrent when swollen by the melting of the snows in spring, that our horses made their way with much difficulty. Winter seemed now to have commenced in earnest: the thermometer was at 21°, and the ground was covered with snow; but we were rather pleased with this foretaste of a nomade winter life. For our bivouac during the night we chose a clear spot of ground between high trees, which afforded some protection from the weather; and, sweeping away the snow, we dragged to the place the trunk of a fallen tree, which formed the foundation of a blazing fire that sent its light far and near. Our guides soon strewed the ground about the fire with a quantity of dry brushwood, on which they placed a layer of the green branches of the dwarf cedar. On this fragrant floor we pitched our three little tents, forming three sides of a square round the fire, while our guides thought the snowy ground on the fourth side quite good enough for them, and used their saddles for pillows. During the time we were engaged in fixing the tents, they unloaded the horses, rubbed them thoroughly down, and fastened them to the trees, that they might not eat the snow or damp grass till they were cool.

These matters having been arranged, the kettle was filled, tea and soup were prepared, and our little country pipes lighted. After supper our guides entertained us with relating wonderful hunting stories and travelling adventures. One of them told of a Cossack who had killed three bears at the same time—one with his knife, a second with his hatchet, and the third with a noose; and another dilated on the enormous strength of the Siberian elk, which he affirmed could tear up large trees by the roots while

at full speed. Both the Jakuti and Russians in this country seem to have no higher pleasure than telling and hearing stories of this kind. It was late before we crept under our tents, where we slept soundly and comfortably in our bearskins and furs. Before lying down to rest, the guides set their horses at liberty, to seek for grass under the snow.*

Travellers do not always enjoy such undisturbed repose at a place of this kind. In spring and early in the summer the melting of the snow often causes such sudden floods, that it is considered a prudent precaution to select one's sleeping-place near some large tree, which will afford a convenient retreat in case of such an accident.

As we approached the source of the Tukulan the valley became gradually narrower, the rocks steeper, and the trees more thinly scattered, until they disappeared entirely. The most common trees along the side of the river had been willows and a remarkably large and lofty species of poplar; birch and fir occupied the drier and more stony grounds, and the dwarf cedar covered the slopes of the mountains. Its small but well-flavoured berries attract numbers of black bears and squirrels. Multitudes of grouse breed in the thick larch and pine woods.

On the 22d we slept at the foot of the mount-

* The nature of these northern horses seems admirably suited to the climate. They are of middle size, have a short, thick neck, and are very strong-boned in proportion to their size. Most of them are of a grayish colour: they have very long, rough hair, and, like the other quadrupeds of this region, change their coats *in the middle of summer*. They perform most laborious journeys, often of three months' duration, with no other food than the half-withered grass, which they get at by scraping away the snow with their hoofs, and yet they are always in good condition. It is remarkable that they keep their teeth sound and unworn to old age. May not this be attributed to their never having hard corn, and always feeding upon grass? They are much longer lived than our horses, and are usually serviceable for thirty years.

ains, under the shelter of an overhanging rock, there being no trees. At daybreak the thermometer was —4°. We were now to cros the Werchojansk, which is unquestionably the most difficult and dangerous part of the whole road from Jakuzk to the Kolyma. We had to climb steep precipices, where, from the giving way of the snow, we were often in danger of falling to the bottom; and, when we came to hollows and narrow ravines, we had great labour in clearing away the snow sufficiently to force a passage.

Our guides told us that the gusts of wind from the valleys were sometimes so sudden and violent, that whole parties had been precipitated by them into the abysses, along the margin of which the path ran. We were particularly favoured by the weather. The sky was cloudless, and, when we were at the summit of the pass,* the ice-coated rocks around sparkled in the beams of the noonday sun as if studded with the most brilliant diamonds. Below us, to the north, opened the valley of the Jana, which flows into the Polar Sea, while bluff rocks shut in our prospect to the south: it was indeed a wild scene.

This range divides the tributaries of the Lena from those of the Jana: it consists chiefly of pure black slate, and is steeper on the south side than on the north. It is in latitude 64° 20′, according to our observations, and forms a remarkable line of separation in respect to vegetation. Neither pines, fir-trees, nor aspens (*eberäschen*), which last had been occasionally met with hitherto, are found to the north of it. Larches, poplars, birches, and willows continue as far as 68°: indeed, the latter grow in

* The highest part of the pass is, according to barometrical measurements by Lieutenant Anjou, 2100 feet above the level of the nearest point on the Tukulan, thirty wersts distant. The summits above us seemed to be 800 or 1000 feet higher than the pass.

sheltered places even near the Omolon and the Aniuj rivers.

Some Tungusi, whom we met farther on, assured us that a fish known here by the name of charjus (*salmo thymallus*) was abundant in the lake in which the Jana takes its rise.

There is scarcely a worse route in Siberia (with the exception of dangerous mountain-passes) than that from the Aldan to this place, across morasses, forests, torrents, and rocks, and entirely without shelter; whereas, on the other side of these hills, the path has been conducted over the most favourable ground, avoiding the worst morasses, and has been, in places, widened or otherwise improved. The route is, notwithstanding, one of some importance, as salt and provisions have to be sent by it yearly to the settlements on the Jána and Indigirka. Another great advantage on the northern side consists in the erection, at certain intervals, of huts, built of rough logs, and called *powarni*, or cooking-houses. There is no regular fireplace in them, but a sort of hearth, and an opening in the roof serves to let out the smoke: the traveller through these wild wastes at night, or when overtaken by a snow-storm, knows how to value this rude shelter.

The valley of the Jana has a northern direction, and is bounded to the east and west by peaked mountains, which connect to the south with the Werchojansk range, and to the north gradually sink into lower hills, scattered over a marshy plain. Another chain of some importance extends from this place in a W.N.W. direction towards the Polar Sea, and divides the valleys of the Lena and Jana. It is called the Orulganski Chain, and consists, like all the heights I had hitherto seen, of clay slate, of which the strata run W.N.W., sloping alternately to the east and to the west.

We proceeded along the left bank of the Jana, and on the 25th, near one of the above-mentioned *po-*

warni, we came upon a little hut formed of branches of trees, which at first we thought could not be inhabited. To our astonishment, however, there came out of it a Tungusian, who had settled in this desert for the purpose of hunting reindeer, with his daughter and a couple of dogs. One must have known the climate, and seen the country and the half-transparent hut, to imagine the situation of these two persons. The poor girl was most to be pitied: often alone for days together, while her father was absent in pursuit of game, in this wretched abode, which could scarcely afford sufficient shelter from the wind and rain even in summer, thus helplessly exposed in entire solitude to the most intense cold, frequently to hunger, and in entire inactivity. This Tungusian was one of those who, having had the misfortune to lose their tame reindeer, are obliged to separate from the rest of their tribe, and to seek subsistence by themselves in the wilderness. They are called by their countrymen "fortune-hunters:" few of them long survive the continued conflict with cold, hunger, and dangers of every description. The case of these unhappy men, who are frequently met with in the forests, has attracted the attention of the government, which has recently taken measures for settling them along the banks of the great rivers, and providing them with the means of obtaining subsistence by fishing.

On the 26th of September we reached the first post-station, called Baralas.* It is 157 wersts from the mountains we had passed, and is, according to our observations, in latitude 65° 51′. We were delighted to find here a good, roomy *jurte*, prepared for travellers, and kept in excellent order. Near the door were pieces of transparent ice ranged along on clean snow, ready for the soup or the teakettle. The interior was well swept, clean hay was laid on

* Barglas in the map.

the benches round the walls, and a bright fire was blazing on the hearth. The windows were closed with smooth, transparent panes of ice, carefully cemented with the same convenient material. After having been nine days and nights in the open air, in snow and cold, afraid to take off our clothes, or even to wash ourselves, lest we should be frostbitten, we thought ourselves in a palace, and a thorough toilet seemed to give us new life. Our worthy host, for want of personal experience, appeared hardly able to appreciate our hearty thanks for so great an enjoyment. He then placed before us a good meal of Siberian delicacies, such as frozen Jakutian butter without salt, *struganina*, or thin slices of frozen fish, and, lastly, fresh raw reindeer marrow. We were too well pleased with our entertainer to show any dislike to his fare. In the sequel we grew more used to such food; and, indeed, I must own that I now prefer fresh *struganina* before it thaws, seasoned with salt and pepper, to dressed fish.

On the 27th we left Baralas for the next station, Tabalog, 300 wersts distant. We quitted the ordinary postroad, and took one which the trading caravans follow, and which is nearly 100 wersts shorter. About twenty wersts beyond Baralas we had to cross the Jana, which is here 140 yards broad. The ice was as smooth as a mirror, and our horses, not being rough-shod, could not get on, even when their loads were taken off. The guides were therefore obliged to ride back to Baralas to fetch some sacks of ashes and sand to strew on the ice to make it passable.

Along the flat banks of the Jana, and under shelter of the hills, there are many larch and birch-trees on the route we followed, but they are stunted in their growth.

The country offers very little variety: on the plain there are many lakes, connected with each other by streams of various sizes. On the 3d of

October we came to the station of Tabalog, which is surrounded by lakes well supplied with fish, and by good pasturages. We also found here a comfortable *jurte*, having had no other shelter for the night since we left Baralas than occasional uninhabited and half-ruined huts.

To my great joy, we met here Dr. Tomaschewski, who was returning (much to his own satisfaction) from a three years' tour of duty at Kolymsk.

To the eastward we saw a range of serrated hills running north and south, with little conical points looking like excrescences. These hills form the dividing ridge between the waters of the Jana and the Indigirka. At eighty-five wersts from Tabalog we passed through a valley between these hills. I had no opportunity of ascertaining their composition, but from the numerous fragments of granite, consisting of white feldspar, mica, and quartz, which we met with, I conclude they are of that nature. We afterward came to a large circular valley, still called the Valley of Death, from a tradition that, during the conquest of Siberia, a numerous tribe of reindeer Tunguai retreated to this place, where they made a valiant stand against their pursuers, which ended in the whole horde being slain. A singular accident happened to me here: I had quitted the party to gain a better view of the country, and was rejoining it by what I thought a much straighter and shorter path, when, in crossing a frozen stream, the ice in the middle gave way: my horse immediately disappeared, while I just managed to spring from his back to the ice, and reached the bank in safety. I concluded the animal was drowned; but our native guides, who had seen the accident at a distance, came running to my aid, and laughingly assured me I should find him again both safe and dry. They immediately went to work to enlarge the opening, and soon brought out the horse, very little the worse for his fall. It often happens in this country that,

after the surface of the stream freezes, nearly all the water beneath runs off, leaving an empty space, which in this case was about six or seven feet in depth. Unluckily, my saddle-bags had broken open in the fall, and I lost my store of tea, sugar, and rum: a serious loss in such a region.

Proceeding on our route we came to another valley, the sides of which, wherever they were clear from snow, appeared to consist chiefly of slate. At two places, where I was able to observe them correctly, the strata ran from west by north to east by south, with a dip from north by east to south by west, at an angle of 30°. Large fragments of conglomerate, also consisting chiefly of slate and granite, were lying in the valley.

We came next to a stream with picturesque banks. The singularly broken forms of the lofty walls of rock on either side look like the ruined towers and battlements of a feudal castle. We followed this stream until it conducted us to a plain, after crossing which we came to another range of saddle-shaped hills, consisting also of black slate. I was struck by the varied forms of the strata: some were concentric, others diverged obliquely in various directions.

By following the course of the Gulangina, which winds among the hills, it conducted us to the Indigirka. We saw a number of wild sheep, called here *argaly* (*capra ammon*): they are also to be met with in the Werchojansk Mountains.

At midnight on the 10th of October we reached the little town of Saschiwersk, on the right bank of the Indigirka, 415 wersts from Tabalog. During the journey the cold had never been less than —4°, and we often had it —22°. We had passed our nights in ruined deserted cottages, and in the *poworni*. The plains were still bare of snow, chiefly from the effect of the constant winds.

In 1786, a short time previous to the expedition

of Captain Billings, Saschiwersk, which before only consisted of a few huts, was raised to the rank of a district town by the Empress Catharine II. The presence of the authorities gave to it a temporary importance, but their subsequent withdrawal caused it to fall back to its original insignificance. It has still a good church, and four or five cottages inhabited by the priest and his brother, the native overseer of the post-station, and two Russian families. But, poor as this place is, it has one feature which renders it well deserving of notice, in the person of the clergyman, who is known far and wide by the name of Father Michel. At the time of our visit he was eighty-seven years of age, and had passed about sixty years here as deacon and priest, during which time he has not only baptized 15,000 Jakuti, Tungusi, and Jukahiri, but has really made them acquainted with the leading truths of Christianity; and the fruits of his doctrine, his example, and his counsels are visible in their great moral improvement. Such is the zeal of this truly venerable man for the extension of the Gospel among the inhabitants of these snowy wastes, that neither his great age, nor the severity of the climate, nor the countless other difficulties of the country, prevent his still riding above 2000 wersts a year, in order to baptize the newborn children of his widely-scattered flock, and to perform the other duties of his sacred calling, as well as to assist his people in every way he can, as minister, teacher, friend, and adviser, and even as physician. Yet he sometimes finds time and strength to go to the neighbouring hills to shoot *argali* and other game; and has bestowed so much pains and skill on his little garden that he has reared cabbages, turnips, and radishes. He placed before us sourkrout soup and fresh-baked rye bread, and his pleasure in seeing us enjoy these excellent and long-untasted national dishes was at least as great as our own. He gave us also

another kind of bread of his own invention. It is made of dried fish grated to a fine powder, in which state it will keep a long time if not allowed to get damp; and mixed with a small quantity of meal, it makes a well-tasted bread.

There is much grass in this neighbourhood, and a number of small lakes well supplied with fish, particularly with *sigi schnäpel* (*salmo cavaretus*) and *tschiri*, another species of the same genus. The population consists chiefly of Jakuti, who during the summer tend their numerous horses and their few cattle in the best pastures, employing themselves at the same time in collecting a store of hay for the winter. When autumn arrives they move to the river, and devote themselves almost entirely to fishing, the chase being quite a subordinate employment. Those who have neither cattle nor horses live entirely by fishing, and make use of dogs with light sledges to draw their fish and their firewood home. On the opposite side of the river there is a slate rock 150 fathoms high; its horizontal black strata alternate with thicker gray ones, interspersed with selenite; and veins of white selenite intersect its whole height.

The government stores of salt and meal having passed this way to Kolymsk a short time before we arrived, a hundred horses had been required for their transport, and this obliged us to wait two days before we could procure any.

On the 13th we took leave of Father Michel, who at parting gave us his blessing, and some little articles for the road. The two days which I passed in his hospitable cottage are among the few bright points of remembrance in this dreary journey.

We proceeded across morasses covered with stunted trees, and here and there a pasture, and a hut where we could pass the night, until we came to the large Lake of Orinkino. Here we entered the Kolymsk district, and from this point to the Ala-

sej River, a distance of 250 wersts, the country is entirely uninhabited, consisting chiefly of morasses, which are impassable in summer, and which afford no food either for men or cattle. These *badaràny*, as they are called, are never thoroughly dry. After a continuance of dry weather in summer, there forms over them a crust, which, like thin ice, will support a light weight, but gives way with a somewhat heavier one. The horses of such travellers as are obliged to pass them in summer break in this way through the crust, but do not sink very deep, being brought up by the substratum of perpetually frozen earth not far below the surface. There can scarcely be anything more desolate than the appearance of these *badaràny*, covered only with half-withered moss, and bearing here and there, on the higher spots, a few miserable larch-bushes, which just show themselves above the ground. The winter is, indeed, the only season when these morasses are properly passable; and then, although the ground is hard and safe, the traveller on these vast unsheltered wastes is exposed to the most violent tempests and snowstorms, from which he can only seek refuge in a few widely-scattered and miserably-built *povarni*, in which he runs a risk of being suffocated by the smoke.

We came next to the low range of wooded hills called the Alasej Range, which separates the waters of that river from those of the Indigirka. In the streams among these hills there is much native iron found: it is of excellent quality, and the Jakuti work it into knives, hatchets, &c. Between these hills and the Kolyma, lakes and pasture-ground reappear, and a few solitary inhabited *jurti* are met with, becoming more numerous as the Kolyma is approached.

On the 21st of October, to our great pleasure, we saw above the trees a column of reddish smoke, proceeding from the Sardach station, where we hoped

to rest a little, after an eight days' laborious journey, without any shelter, and with a temperature from —6° to —22°.

The comfort of the house surpassed our highest expectations. There was one room for ourselves, and another for our guides; a bath-room, a store-room, an outer court, long sheds for the protection of the government stores on their way to Kolymsk, a small summer-house, and a sundial; stables for horses and cattle at a short distance from the house, and the whole enclosed by a neat palisade fence, running down to a little lake at the foot of the hill, on the opposite side of which there is a thick larch-grove. It is difficult to describe the pleasure we experienced at the sight of this little settlement, bearing so many marks of the care and taste of civilized man. I received here the first tidings of M. Matiuschkin's arrival at Kolymsk, and of his proceedings there.

From Sardach to Sredne Kolymsk the distance is 250 wersts; there are three well-provided post-stations on the way, and the road itself is rendered remarkably agreeable for these regions by several lakes, dense groves of larch, fine willow-bushes, and, generally, a more flourishing and varied vegetation. The change is more decidedly marked after passing a little ridge of hills which divides the waters of the Alasej from those of the Kolyma. It was here that, in crossing a lake, I first saw a herd of wild reindeer. They shot almost close by me, pursued by two wolves, who succeeded in pulling down one of them.

It was too dark to distinguish objects when we reached the banks of the Kolyma on the evening of the 25th of October, but the ascending smoke mingled with sparks, the barking of the dogs, and the occasional glimmering of a lamp through an ice window, told us that we were approaching Sredne-Kolymsk, the church-tower of which we had before seen at a considerable distance. This is the usual

residence of the authorities of the district, and possesses a new and well-built church and thirteen houses. In summer most of these are empty, their owners being absent for the chase, fishing, or some other employment. At the time we arrived the place was particularly animated, as the inhabitants were engaged in constructing a dam across the river, to which they were fastening baskets, &c., to catch the fish in ascending the stream. Great quantities were formerly thus taken, but they have so diminished in number the last few years that the people have been obliged to get rid of most of their dogs for want of food for them, and to have recourse to horses and cattle. They are, indeed, giving great attention to this last object, but the shortness of the summer renders it extremely difficult to provide forage.

The cold was daily increasing: during the latter half of our journey from Sardach to this place we had had a temperature from —9° to —33° with a clear sky, but happily without wind. It was necessary for us to remain a day at Sredne Kolymsk to obtain a complete travelling equipment of fur clothing, such as the inhabitants wear, and which will be described in the following chapter.

I was so helpless when loaded with my new costume, that I was obliged to be lifted on my horse: luckily, the skin of the reindeer combines remarkable lightness with its great thickness and warmth, or it would scarcely be possible to sustain the weight of it. The natives get along very well with these garments, and slip in and out through the narrow doors of the cottages, where we novices were constantly sticking fast.

On the 27th of October we left Sredne Kolymsk, and continued our journey on horseback along the left bank of the Kolyma, meeting occasionally with settlements. After travelling 320 wersts we came to a Russian village on the banks of the river Omo-

lon. Hree we changed our mode of travelling, to our great joy; for the intense cold and our cumbrous dresses rendered riding exceedingly inconvenient. Quitting our horses, we placed ourselves in the light, narrow sledges used here, called *narty*, which are drawn by dogs, and with which we found that we got on much more rapidly than with horses, the surface being quite smooth, and that we also suffered far less from the cold. Hitherto we had seen woods of larch and poplar, and had met occasionally with birch, and with fine grassy meadows; but from this time we scarcely saw any trees, and the bushes became more and more stunted as we proceeded farther north. Two days more brought us to Nishne (Lower) Kolymsk: we arrived there on the 2d of November, and the temperature was then —40°.

Thus we had travelled eleven thousand wersts in 224 days, and reached the first point to which we were bound. Nishne Kolymsk is a fishing village, and was destined to be our headquarters for the next three years.

CHAPTER III.

Topography of the District of the Lower Kolyma.—Character of its Climate.—Winter.—Diseases.—Vegetable Growth.—Abundance of Animals.—Former Inhabitants.—Present Inhabitants.—Houses.—Dress.—Sufferings of the People from want in the Spring.—Overflowing of the Rivers.—Fisheries.—Taking of Birds.—Hunting the Reindeer.—Summer Employment of the Women.—Catching Herrings.—Trapping the Fur Animals.—Intrepidity of a Hunter.—Employment of Dogs.—Interior of the Houses.—Household Economy.—Amusements.

The River Kolyma has its source in 61½° lat., and 146° long., in the mountains known under the name of Stanowoj-Chrebet, where the Indigirka also ri-

ses: its course for the first 1500 wersts follows the direction of the eastern branch of those mountains, or is N.N.E.; and it empties itself into the Polar Sea in 69° 40′. For the first 800 wersts the stream is exceedingly rapid, but beyond this it becomes wider and more tranquil. The right bank is steep, consisting of bluff rocks, with the exception of the portion between the mouths of the tributary rivers Omolon and Aniuj. These rocks are precipitous and often overhanging, composed of slate,* intersected in some places by veins of indurated clay, and chloride slate, as at Cape Kresty; in others the slate is black and pure, without admixture, as at Cape Aspidnoj (Slate Cape); and sometimes, as in the Kandakow rocks, it is interspersed with amygdaloid chalcedony, crystals of amethyst, and large specimens of rock-crystal. No fossils have been met with.

Notwithstanding the rocky character of the right bank, vegetation is tolerably rich: we saw the beautiful *epilobium latifolium* in bloom. A species of *sanguisorba* also abounds, the roots of which are collected by the natives, and used as an article of food.

The left bank is less elevated: in the district of Sredne Kolymsk there are still high-lying pastures, but in approaching the sea, the bank and the district become gradually lower and flatter, until at last the whole country is one enormous *tundra* or moss-level, extending to the Alasej and the ocean.

Besides the two rivers Aniuj (greater and lesser), and the Omolon, there are several smaller tributaries; those which have their sources in mountainous or rocky districts being called *kamennye protoki*, or rock-streams, and those which flow from lakes, *wiski*.

* Granite is found at the Baranow rocks, and in the district of Cape Schelagskoj. I observed the first traces of it at Medweshy Mysa, Bear Cape.

Some wersts above the mouth of the Omolon, an arm of the Kolyma encloses a portion of the western *tundra*, forming a low swampy island, on the southern margin of which Nishne Kolymsk is situated. The river here takes an easterly course for about 100 wersts, after which it turns sudddenly to the north, and, forty wersts below, it divides into two branches, forming the island of Merchojanow. The greatest breadth of this island is nine and a half wersts, while in length it extends to the mouth of the river, where it is much intersected by small streams. The eastern arm is six wersts in breadth, and is called Kammenaya, or the stony Kolyma; the western, which is not above four wersts wide, is called the Pochodskaja, and also called the Srednaja, or middle Kolyma. About twenty-four wersts farther to the north, a less considerable arm, called the Tschukotskoj, branches off and flows to the north-east. These three arms form the *embouchure*, which is about 100 wersts across. The middle and the stony Kolyma have sufficient depth of water for vessels of all kinds; the navigation is, however, impeded and rendered dangerous by the number of shifting sandbanks formed by their current, especially near the entrance from the sea. Besides the two larger islands already mentioned, there are a number of smaller ones, which are low, and have been formed in the same manner as the sandbanks.

The extreme severity of the climate of this district may be attributed perhaps even more to its unfavourable physical position than to its high latitude. To the west there is the great barren *tundra*, and to the north a sea covered with perpetual ice; so that the cold N.W. wind, which blows almost without intermission, meets with no impediment; bringing with it violent storms of snow, not only in winter, but frequently in summer. This unbroken exposure influences the temperature so greatly, that the average or mean temperature of the year is not higher than 14°.

At Nishne Kolymsk the river freezes early in September; and nearer the mouth, especially of the most northerly branch, which has the least rapid current, loaded horses often cross on the ice as early as the 20th of August, nor does it ever melt before the beginning of June. It is true that during the three months which are honoured with the name of summer, the sun remains, for fifty-two days, constantly above the horizon, but then so near it that his light is accompanied by very little heat; his disk often assuming an elliptical form, and being so dim that it may be gazed upon with the naked eye without inconvenience.

During this season of perpetual light the usual order of nature is not disturbed: as the sun approaches the horizon, evening and night come on, and all is hushed in repose; as he again ascends, nature awakes; the few little birds hail the new day with their cheerful twittering; the small folded yellow flowers expand their petals, and everything living appears anxious to partake in the enjoyment which his faint beams afford.

As under the tropics there are only spring and summer, so here there are only summer and winter, in spite of the opinion of the inhabitants, who talk quite seriously of their spring and autumn. Spring they affect to recognise in that period when the sun is first visible at noon, though at this vernal season the thermometer is often —35° during the night; and autumn they reckon from the first freezing of the river, which is early in September, when the temperature is frequently —47°.

The vegetation of summer is scarcely more than a struggle for existence. In the latter end of May the stunted willow-bushes put forth little wrinkled leaves, and the banks which slope towards the south assume a semi-verdant hue. In June the temperature at noon attains to 72°; the flowers begin to show themselves, and the berry-bearing plants blos-

som, when not unfrequently an icy blast from the sea turns the verdure yellow, and destroys the bloom. The air is clearest in July, and the temperature is then usually mild. But, as if to imbitter to the inhabitants of this dreary region any semblance of summer, and to make them wish for the return of winter, millions of moschetoes now darken the air, and oblige them to take refuge in the thick and pungent smoke of the *dymokuries*,* to protect themselves against these tormentors. But, as everything in nature has a beneficent purpose, and there is no disadvantage that is not compensated by good, these insects render an essential service to the inhabitants by forcing the reindeer to leave the forests, and to take refuge in the cold open plains near the sea. This they commonly do in troops of many hundreds, or even thousands; and then the hunters, lying in wait for them, especially as they cross the rivers and lakes, kill great numbers without difficulty.

Another service rendered by the moschetoes is, that they prevent the horses from straying away in the vast plains, where there are no enclosures, and where they feed without keepers. Their instinct teaches them to keep near the *dymokuries*, to protect themselves from their enemies, where they graze on the leeside of these glimmering heaps in the cover of the smoke. When the pasture is fed off in one place, the smoke-heaps are established in another; and they are generally enclosed by a slight fence, to prevent the horses from coming too near the fire.

In summer the rolling of thunder-storms is heard in the mountains, but they have little influence on the great plains.

* These are large heaps of fallen leaves, moss, and damp wood, which are set on fire, and the dense smoke from them drives away the insects. They are placed both in the pastures and near the houses, so that the inhabitants pass the whole moscheto season in a constant cloud of smoke.

Winter, properly so called, prevails during nine months of the year. In October the cold is somewhat mitigated by thick fogs, and by the vapour rising from the freezing sea; but in November the intense cold begins, and in January it increases to —65°. Then breathing becomes difficult: the wild reindeer, that denizen of the polar region, retires to the deepest thicket of the forest, and there stands motionless, as if deprived of life. The night of fifty-two revolutions of the earth is relieved by the whitened surface and the strong refraction of the snow, as well as by frequent auroras. On the 28th of December a pale twilight begins to be visible at noon, but it is not sufficient to dim the stars. As the sun returns, the cold becomes even more severe, and its intensity at his rising in February and March is especially felt. Perfectly clear days are extremely rare in winter, as the sea-winds, which constantly prevail, bring with them vapours and fogs, which are sometimes so dense as wholly to conceal the stars of the deep blue polar sky. These thick fogs are called *morrok*. They prevail least in September.

There is a remarkable phenomena known here by the name of *teplot weter* (the warm wind), blowing from S.E. by S. It sometimes begins suddenly, when the sky is quite clear, and in the middle of winter raises the temperature in a short time from —47° + to 35°; so that the plates of ice, which are the substitutes for glass in the windows, begin to melt. In the valleys of the Aniuj, this warm wind is frequently felt; but its influence does not extend to the west of Cape Tschukotskoj. It is seldom of longer continuance than twenty-four hours.

Though, from what has been said, the climate evidently is one of the most severe and unkindly, yet it must be owned that it is not, on the whole, prejudicial to health. There are here neither scurvy, nor any dangerous infectious diseases. Catarrhal fever and complaints of the eyes are preva-

lent, but only in October, during the thick fogs, and in December, when the severe frosts set in. The inflammation of the eyes is partly caused by reflection from the snow, which is so powerful as to require a protector to be worn over them. The sickness called *powetry*, which prevails among the inhabitants of the coast to the west of the Kolyma, is much more rare and less malignant in this district. The disease which in 1821 attacked the dogs throughout Northern Siberia, did not make its appearance at Kolymsk till a year later than on the rivers to the west, and along the Tschuktschi coast. There is here, indeed, as in all Northern Siberia, that singular malady called *mirak*, which, according to the universal superstition of the people, proceeds from the ghost of a much-dreaded sorceress that is supposed to enter into and torment the patient. The *mirak* appears to me to be only an aggravated form of hysteria: the persons attacked by it are chiefly women.

The scanty vegetation corresponds to the severity of the climate; and in the neighbourhood of Nishne Kolymsk it is especially meager. The surrounding country consists of a low marsh, on the surface of which a thin layer of vegetable earth rests upon ice which never thaws: it supports a few stunted larches, whose roots, unable to penetrate into the frozen soil, extend along its surface, and gather nourishment only by the smaller fibres, which alone are completely covered, while small-leaved willows grow here and there on the banks facing the south. On the plains a hard, reedy grass furnishes a coarse food for cattle, the quality of which is best in those parts that are occasionally overflowed by sea-water. The nearer we approach the ocean, the more rare the bushes become: on the left bank of the Kolyma they cease entirely about thirty-five wersts north of Nishne Kolymsk; but on the right bank they extend farther, the soil, from its greater dryness, being more favourable to vegetation,

and producing stronger plants, as well as a greater variety, than the dreary icy moor on the opposite side. On the right bank there are patches of good grass, of wild-thyme, and of wormwood; and even the wild-rose and the forget-me-not are to be seen. The currant, the black and the white whortleberry, the cloud-berry, and the aromatic dwarf crimson bramble (*rubus arcticus*) blossom here, and in favourable seasons bear fruit. No one attempts the cultivation of any vegetable, nor could the smallest success attend it. At Sredne Kolymsk, which is 2° farther south, I have seen radishes, and even cabbages, but the latter formed no heads.

In the valleys of the Aniuj, which are sheltered by mountains from the prevailing cold winds, birches, poplars, willows, and the low-creeping cedar grow. In comparison with the frozen naked moss-tundra, indeed, one might here imagine himself transported to Italy; but even in these valleys, the snow appears to melt only to form fresh ice beneath the thin covering of mould which the sun never penetrates.

The poverty of vegetation is strongly contrasted with the rich abundance of animal life. Elks, black bears, foxes, sables, gray squirrels, and countless herds of reindeer, fill the upland forests, while stone foxes and wolves roam over the low grounds. Prodigious flights of swans, geese, and ducks arrive in spring, in search of deserts where they may moult, and build their nests in safety. Eagles, owls, and gulls pursue their prey on the seacoast; ptarmigan run in troops among the bushes; snipes are busy along the brooks, and in the morasses; the social crows seek the neighbourhood of men's habitations; and, when the sun shines in spring, one may even sometimes hear the cheerful note of the finch, and in autumn, that of the thrush.*

* According to the observations of Dr. Kyber, the only birds

Yet all this manifold life cannot alleviate the dreariness of the desert, or repress the thought that here is the limit of the animated world. The animals either visit or inhabit these icy wastes in obedience to the unerring laws of instinct: they have no choice to exercise. But what induced man to fix himself in this dismal region? I speak not of the few Russians, who stay for a limited period in the hope of gain, but of the tribes who came hither without any such motive, and who have taken up their permanent abode in these countries. Nomade races, under milder skies, wandering from one fruitful region to another, gradually forget the land of their birth, and even prefer new homes. But here there is nothing to invite. Endless snows and ice-covered rocks bound the horizon. Nature lies shrouded in almost perpetual winter. Life is an unceasing conflict with privation, and with the terrors of cold and hunger. What, then, led men to forsake more favoured lands for this grave of nature, which contains only the bones of an earlier world?* It is in

which winter here are the ptarmigan, the common crow, the bald eagle, and the snowy owl. The snow-bunting and the Kamtschatkan thrush (*motacilla calliope*) appear early in April. The lapwing, common snipe, and ring-plover arrive later; and in May, swans, four kinds of geese, and eleven kinds of ducks, make their appearance.

* M. Hedenström gives some interesting particulars respecting the mammoth-bones, the peculiar production of Siberia, and more particularly of the northern islands. According to his account, these bones or tusks are less large and heavy the farther we advance towards the north, so that it is a rare occurrence on the islands to meet with a tusk of more than three pood in weight, whereas on the Continent they are said often to weigh as much as twelve pood. In quantity, however, they increase wonderfully towards the north, and, as Sannikow expresses himself, *the whole soil of the first of the Lächow Islands appears to consist of them*. For about eighty years the fur-hunters have annually brought large cargoes of them from this island, but as yet there is no sensible diminution of the stock. The tusks on the islands are also much more fresh and white than those of the Continent. A sandbank on the western side is the most

vain to question the inhabitants, who are incessantly occupied with the necessities of the present hour, and among whom no traditions preserve the memory of the past. Nothing definite is known concerning the people of this country even at the not very remote epoch of its conquest by the Russians. I have indeed heard an obscure saying, "that there were once more hearths of the Omoki on the shores of the Kolyma than there are stars in the clear sky;" there are also remains of forts, formed of trunks of trees, and tumuli, the latter being for the most part near the Indigirka, and both may have belonged to these Omoki, who have now disappeared.

From the little I could gather on the subject, it would seem that the Omoki were a numerous and powerful people; that they were not nomades, but lived in settlements along the rivers, and supported

productive; and the fur-hunters declare that, when the sea recedes after a long continuance of easterly winds, a fresh supply of mammoth-bones is always found washed up on this bank, proceeding apparently from some vast store of them at the bottom of the sea.

In addition to the mammoth, the remains of two other unknown animals are found along the shores of the Polar Ocean. The head of one of these bears a strong resemblance to that of the reindeer; differing from it, however, in the size and form of the antlers, which descend and turn up towards the extremity. The head of the other animal is usually about thirty-one inches long and twelve inches broad, the nose being bent downward, and showing several rows of bony excrescences. Near these last-named sculls something like the claw of an enormous bird is generally found. These claws are often three English feet long, flat above, but pointed below, the section presenting a triangle. They appear to have been divided into joints throughout their whole length, like the claws of a bird. The Jukahiri, who make use of these horny claws to give increased force to their bows, maintain that they, together with the heads found near them, belonged to an enormous bird, respecting which they relate a number of marvellous stories. Dr. Kyber, who had frequent opportunities of examining both the heads and claws, believes them to be the remains of a species of rhinoceros.

themselves by fishing and hunting. Another numerous tribe, the Tschukotschi or Tschuktschi, appear to have wandered over the *tundra* with their herds of reindeer, and certain features of the country still bear their name; as, for example, the Malaja and Bolschaja Tschukotscha, the greater and the lesser Tschuktschi rivers. Both races, however, have disappeared: the Omoki having perished probably by want and disease, while the Tschuktschi have partly wandered away, and partly become confounded among more recent tribes, forming with them the present scanty population of the country. In the whole Kolyma circle there are now 325 Russian peasants, citizens, and Cossacks, 1034 Jakuti, and 1139 Jukahiri and other races; in all, 2498 males, of whom 2173 pay *jassak* or tribute.

This *jassak* consists of 803 foxes and 28 sables, which may be estimated at 6704 roubles, and 10,847 roubles in money, making an average of about eight roubles to be paid by every male of the Jakuti and other tribes. The Russian peasants and citizens are chiefly descended from exiles, and the Cossacks from those of that race who retreated here from the fortress on the Anadyr when it was destroyed by the Tschuktschi. Up to the year 1812 the Cossacks were considered as attached to the public service, and received annually from government a certain supply of provisions, which, however, they were hemselves required to bringt from the upper district of the Kolyma. With the improvidence so characteristic of this people, in consequence of a few successive good hunting and fishing years, they neglected to avail themselves of this supply, and in 1812 it ceased to be issued. Since that period there have been several years in which the fishing and hunting were less productive, general want has prevailed, and they have had occasion bitterly to regret the forfeiture of the advantages which they formerly enjoyed. With the exception of six of their

number, who are retained in the public employ, the Cossacks now form a corporation governed by a principal, who is under the commissioner at Sredne Kolymsk: they pay no tribute, but are required to appear when called upon, equipped with sabres and firearms. They also furnish a party of twenty-five or thirty men to keep order at the annual fair, and to protect the Russian and other traders, if necessary, against the Tschuktschi.

Although the Russians in this district do not differ much from the other inhabitants in their clothing and modes of life, nor even in their features, still they are easily distinguishable from them by their more muscular frames. They are generally taller, with fairer complexions, and many of them have light brown hair, which is never seen among the native races. The Russian women, too, in spite of the incessant drudgery to which they are subjected, and their want of cleanliness, have more agreeable features than the natives, and many among them might even be called good-looking. I was particularly struck with their general kindness and their affectionate demeanour, and often I had occasion to witness the heartfelt joy with which they welcomed the return of a husband or son from the dangers of the chase or of a distant journey. Most of the Russian women sing very agreeably songs of their own composing, the subject of which is frequently the absence of those who are dear to them. In these songs it is curious to remark the reminiscences of earlier times, in the allusions to doves, nightingales, flowers, and other objects not to be met with in a distance of several thousand wersts, and of which the singer can know nothing except by tradition.

The dwellings of the two races are much alike. As the larch-trees are too small to be of any use in the construction of their habitations, they are obliged to employ driftwood for that purpose. This is carefully collected at the time of the floods in

spring, and it sometimes takes several years to accumulate the necessary timber for a house. The walls are formed of logs in the Russian manner, the interstices being filled with moss, and plastered over with clay; while a mound of earth is thrown up against them, reaching as high as the windows, to serve as a protection against the cold. The huts are usually from twelve to eighteen feet square, and about nine feet high; the roofs being flat, and covered with a considerable thickness of earth. The interior arrangement is in all the same: in one corner of the room is the Jakuti *tschuwal*, a kind of open fireplace made with willow-rods, plastered on both sides with a thick coat of clay, and the smoke escapes by a hole in the roof. Recently they have begun to make Russian stoves of hard-beaten plaster, with chimneys. Two or three sleeping-places are partitioned off, according to the wants of the family; and the remainder of the space serves for cooking, dwelling, working, and the reception of their friends. Wide benches are ranged round, on which are laid reindeer skins for their guests to sit and sleep on. Household utensils, guns, bows and arrows, &c., hang about the walls. Their two little windows of a foot square or less might give sufficient light if they had glass panes; but in summer they are of fish-membrane, and in winter consist of plates of ice six inches in thickness. On one side of the house is a small porch, and adjoining to it the provision-room, made of thin boards. There is sometimes a second fireplace in the porch. All the houses have the windows facing the south. On the roof and about the house are scaffolds for drying fish; and there is also a small kennel for sheltering the dogs in extreme cold weather; but they are more generally tethered outside, where they bury themselves in the snow. Enclosed courts are scarcely ever seen. The houses are not arranged in streets, but are placed without order, and

according to the caprice of the builders. The people make but little use of baths; and, although the government has caused them to be constructed in every village, they are neglected, and are mostly falling into decay.

Generally speaking, indeed, there is but little cleanliness. Only a few of the more wealthy inhabitants have under garments of linen or cotton cloth, those in general use being made of soft reindeer skins, sewed together, and worn with the hair inside. The outside is coloured red with the bark of the alder, and the edges and sleeves are trimmed with narrow strips of beaver or of river otter-skin, which are bought at rather high prices from the Tschuktschi: the trousers are also of reindeer skin. Over the fur shirt an outer garment called *kamleja* is worn. It is made of thick tanned reindeer leather, without the hair, and is coloured yellow by smoke: it is closed before and behind, having a hood fastened to the back of the neck, and this is drawn over the head on leaving the house. People in better circumstances have a garment of the same form for wearing within doors, made of a cotton cloth called *kitajka*. They wear a sort of boots made of brown leather or of black goatskin, sewed to tops of reindeer skin with the hair on; these are ornamented with various devices in silk, and sometimes even embroidered with gold thread, and two bands crossing round the legs bind the boots and trousers together. In the open air they wear a double fur cap, narrowing towards the top, but deep and broad enough to cover the forehead and the cheeks; and, besides this, they wear separate coverings for the forehead, ears, nose, and chin. These are often articles of great cost, the forehead-band especially, which, being worn more for ornament than use, is adorned with different kinds of coloured and gold embroidery; and after the cap is laid aside on entering the house, the forehead-band is often kept on for show.

On journeys, the *kuchlanka* is worn over all the above-mentioned garments. This is a wider *kamleja*, made of double skin, with a large hood attached to it: hand-bags are sewn to the sleeves, a small opening being left on the inside, through which the hand can be protruded when required for use, and immediately drawn back again to protect it from the cold. Instead of the house-boots, half stockings, made of the skin of the young reindeer, are then worn, with the *torbassy*, or boots, drawn over them. In this costume one can defy the severest cold for a long time.

In the belt is carried a large knife; the *gansa*, a very small pipe, made of brass or tin, with a short wooden tube; a pouch containing the materials for striking a fire, and the tobacco, which is mixed with finely-powdered larch-wood, to make it go farther.

The Russians here use tobacco in the same manner as all the people of Northern Asia, swallowing the smoke, and allowing it to escape again by the nose and ears. They speak of the pleasurable sensation arising from the sort of intoxication thus produced, and assert that inhaling the smoke in this manner affords much warmth in intensely cold weather.

The house-clothing of the women differs from that of the men chiefly in being made of much lighter skins. Females who can afford it wear cotton, and sometimes even silk stuffs, and ornament the part about the throat with trimmings of sable or martin. They also bind cotton or silk handkerchiefs about their heads, and sometimes wear knitted caps, under which the married women conceal their hair, after the Russian fashion. The young girls allow their hair to hang down in a long braid, and wear a forehead-band when they are more dressed than usual. Their gala dress very much resembles that which was worn some twenty years ago by females of the trading classes in Russia. The larger the figures and the more various the colours of the silk, and the heavier and gayer the earrings, the more tasteful

and elegant the dress is considered. The traders who attend the yearly fairs know how to take advantage of this: they bring the finery which has gone out of fashion even at Jakuzk to the banks of the Kolyma, where they sell it for high prices, as being of the newest mode.

Fully to understand the customs and peculiarities of these people, one must have lived among them; must have accompanied them from their winter dwellings to their summer *balagans*, have navigated the rapid rivers with them in their *karbasses* or heavy boats, and in their *wetkas* or light canoes. One must have climbed with them the rocks and the hills, on foot and on horseback; have thridded the mazes of the thick forest with them; and with them have coursed over the boundless Tundra, on the light sledge, drawn by dogs, in intense cold, and in violent snowstorms. In a word, one must have been domesticated among them, as we were during nearly three years. We lived with them, we dressed as they did, we ate the same food, and shared with them all the privations and discomforts inseparable from the climate, frequently experiencing the most pressing want of all the necessaries of life. I am therefore enabled to give a faithful picture of life at Nishne Kolymsk, which, apart from a few local circumstances, will apply to the whole course of the Kolyma.

Let us begin, then, with spring. The fisheries, as we have before remarked, are the most important branch of industry which the inhabitants pursue, and one on which their very existence may be said essentially to depend. The immediate neighbourhood of Nishne Kolymsk is unfavourable to it, so that in spring the people leave their habitations, and scatter themselves along the banks of the river in search of places which are more advantageous, where they erect their *balagans* or light summer-huts, and make their preparations for fishing. Most of them have their country-houses for this purpose, at

the mouths of the smaller streams, which they begin to visit in April. When the traders are passing the lesser Aniuj, about the middle of May, on their return to Jakuzk from the yearly fair at Ostrownoj, the whole population of the place goes out to meet them, leaving only the Cossack commander, one or two guards, the priest, and perhaps a few destitute families, who have nothing to sell, and who are too weak to follow the crowd.

Spring on the Kolyma is the most trying season of the year: the provisions laid up during the previous summer and autumn have been consumed, and the fish, which had withdrawn into the deepest parts of the rivers and lakes during the intense cold, have not yet returned. The dogs, too, are often so much enfeebled by their winter work and by insufficient food, that they are unable to chase the reindeer and elk over the *nast*,* the only favourable opportunity which the early spring affords for obtaining food. A few ptarmigan are snared, but they are quite insufficient to satisfy the general want. The Tungusi and Jukahiri now flock in from the Tundra and from the Aniuj, to the Russian villages on the Kolyma, to escape starvation. One sees them, like wandering spectres, pale, without strength, and scarcely able to walk; they greedily pick up the remains of bones, skin, or anything else which can alleviate the pangs of hunger. But there is little relief for them here, where want likewise reigns; the inhabitants being often obliged to have recourse to the small re-

* When the warmth of the sun in spring thaws the surface of the snow, it freezes again at night, forming a thin crust of ice, which is just strong enough to bear a light sledge with its team of dogs. This state of the snow is called *nast*. The hunters profit by it to pursue the elk and reindeer by night; and as the weight of these animals cause them to break through, they fall an easy prey. The *nast* continues to form during a longer or shorter period, according to the more or less sheltered situation of different places, and the depth of the snow. It does not occur every year; and during the whole time of our stay there was no *nast* in the district.

mains of the provisions reserved for the dogs, in consequence of which many of them perish.

It is true, a magazine has been established by the government for the sale of rye-meal, which is disposed of not only without profit, but at some sacrifice. Still, the enormous distance, and the difficulties of the transport, which sometimes occupies two years, so raise the cost of the article that the greater number cannot buy it, though, in order to bring it within their reach, payment is not required until the following autumn or winter. There are very few who can engage to pay twenty roubles for a pood of meal, which is not unfrequently half spoiled by the long journey. While we were at Sredne Kolymsk, the commissioner was requested to give in an estimate of the quantity of meal which should be sent for the use of his district. He thereupon applied to the *golowa* of the Cossacks, who is particularly charged with the superintendence of the Tungusi and Jukahiri, when the reply of this latter functionary was, "I do not know how to furnish you with the definite estimate which you require; but this much I can assure you, that there are not many here who would be able, or even disposed, to pay two roubles a day to prolong their miserable existence."

It was my lot to pass here three such dreadful springs; and I cannot now look back without shuddering on the scenes of misery which I have witnessed, but which I may not venture to describe.

When need, however, is at the highest, help usually appears. Suddenly large flights of birds arrive from the south: swans, geese, ducks, and snipes of various kinds. The general distress is now at an end. Old and young, men and women, all who can use a gun or a bow, hasten to the pursuit. Fish also begin to be taken in nets and baskets placed under the ice. The terrible time of hunger is for the present ended. It is fortunate that the food is not very abundant at first, so that the half-starved people are

accustomed to it by degrees, just as an experienced physician would treat his patients. But in June the rivers open, and the fish now pour in in abundance: all hands are in activity to make the most of this short harvest, in order to lay up provisions for the following winter. Still this season sometimes brings with it a new difficulty. The current not carrying away sufficiently fast the masses of ice, they ground in the bays or shallows, and thus form a kind of dam, which obstructs the course of the river, and causes it to overflow its banks; thus the meadows and villages are laid under water, and those who have not taken the precaution to drive their horses to higher ground, lose them. In the summer of 1822 we had an inundation of this kind. It was so sudden that we had but just time to remove our things to the flat roof of the house, where we passed more than a week. The lake to the north of Kolymsk united its waters with those of the river, and the tops of the houses in the village looked like an archipelago of little islands, among which the people went about in their boats, visiting each other and fishing. These overflowings of the rivers take place more or less every year.

When the waters have subsided, the great net-fishing begins. In some places this lasts only a few days; while in others, as in Pochodsk, and at the Tschukotskoj River, it continues throughout the summer, though the quantity taken gradually diminishes. At this season, sturgeon, a large kind of salmon trout (*nelma*), a large fish with round back (*muksun*), and a species called *tschir*, are taken. The fish caught in coming down stream are generally in very poor condition, for which reason they are usually put aside for the dogs, and are prepared as *juchala*, *i. e.*, cleaned, cut open, and laid flat and dried in the sun. The entrails are boiled down into a kind of train oil, which is often used in cooking as well as for the lamps.

Strong gales from the sea sometimes so agitate the water in the river as to prevent the putting down the nets at the time when the greatest number of fish are passing. Partly for want of skill, and partly owing to a deficiency of nets, which are here generally made of horsehair, the fishermen do not venture to place them in the mid current, where the fish are both most numerous and of the largest size. The same reasons also induce them to confine themselves, in a great measure, to the tributary streams. During the floods vast numbers of fish are driven into these smaller rivers and the lakes connected with them; and on their return, when the waters subside, the inhabitants take them in large quantities by means of weirs, baskets, &c. The whole population engages in these minor fisheries, which are made in some degree common, the produce being divided in due proportion among the owners of the baskets, whereas, in the larger fishery, the nets are drawn in succession, according to an established order, and the fish taken belong exclusively to the owner of the net.

It is chiefly in the smaller rivers that they catch the fat *tschiri*, which are a favourite delicacy, and are prepared as *jedomnaja jukola*. This differs from the *juchala* already spoken of, by its being made only of the very best fish, and prepared with great care. The fish are split in halves, the entrails taken out, and, in order that they may be more tender and better dried, they are scored; and sometimes they are smoked instead of being dried. The upper part of the back is usually cut off, dried separately, and pounded in a wooden mortar, after which it is mixed with train oil, and preserved for the winter in wooden vessels with narrow mouths. In like manner, the under part, which contains the most fat, is kept by itself, as it furnishes a favourite addition to the cakes, which are made, not of meal, but of the soft parts of fresh fish, cut small and baked.

After these fisheries are over, the larger fish begin to ascend the rivers from the sea, and are taken both in nets and baskets.

While the different fisheries are going on, the swans, geese, and ducks are moulting, and bringing out their young broods on the lakes. As soon as the birds arrive, some of the fishermen are sent to watch their nests. At first they content themselves with taking away part of the eggs, which are replaced by new-laid ones. The chase of the birds does not begin until they are moulting and unable to fly, when a great number of the fishermen leave the rivers and go to their breeding-places. They employ trained dogs to pursue them, and kill great numbers with guns, arrows, and sticks. Part of them are smoked, but the most are frozen and preserved in snow against the winter. This chase is much less productive than it was formerly. Twenty years ago several thousand geese were sometimes thus taken in a single day; whereas now it is called a good season when 1000 geese, 5000 ducks, and 200 swans are killed at the mouth of the Kolyma.* This, however, does not arise from any real decrease in their numbers; but the people being busily engaged in the fishery, which is less troublesome, and ordinarily more certain in its returns, are apt to delay the chase till the proper time for it is nearly past.

Besides their stores of fish and fowl, good housekeepers provide themselves also with reindeer meat. When the reindeer are in motion in large troops in the summer, a part of the hunters go up the Aniuj in boats, while the others proceed on horseback to the shores of the large lakes in the Tundra. The animals are driven into the water by trained dogs, and are killed with spears as they are swimming. A skilful hunter may kill a hundred deer on the Aniuj

* It seems to be clearly ascertained that birds of passage do not always visit the same spot two years in succession, but that they frequently change their breeding-places.

in good years, whereas on the Tundra twenty would be a large number, and perhaps he would not get more than five; but, on the other hand, the chase on the Aniuj is often a complete failure, which is never the case on the Tundra; the deer also on the latter are generally larger and better fed than those killed on the former.

While the men are engaged in fishing and hunting, the women avail themselves of the brief summer to collect what little the vegetable kingdom can add to their winter provision. I have before remarked that the partially-thawed soil produces different kinds of berries, and a few edible roots and aromatic herbs, particularly in the mountains. The women are thoroughly acquainted with them all, and collect as many as the more or less favourable character of the season will permit. It is not every year that these poor remnants of vegetation arrive to maturity. In the years 1821, '22, and '23, the berries failed so completely that none were to be met with. Most of them, particularly the bilberries, grow on the eastern side of the Kolyma, and on the declivity of the Pantelejew Mountains; they are gathered in the middle of August. The berry-gathering here, like the vintage elsewhere, is a time of merriment. The younger women and girls go out together in large parties, often passing whole days and nights away, enjoying the open air, and enlivening their work with various amusements. When the berries have been collected, cold water is poured over them, and they are preserved in a frozen state for a winter luxury.

The only plants and roots made use of are the *makarscha* and wild thyme; the latter being employed both in smoking articles of food and as a condiment. The *makarscha* is a farinaceous root, which is used partly as an addition to their meat or fish-cakes, to which it imparts an agreeable flavour, and partly alone, as a kind of delicacy before supper.

The field-mice lay up in their holes large stores of this and of other roots, and the women are particularly expert in discovering these deposites.

In September the shoals of herrings begin to ascend the rivers,* and almost all the population then hasten to the most favourable spots for catching them. The numbers of these fish are often so immense, that in favourable years 3000 or more may be taken at a draught, and in three or four days 40,000 are sometimes caught with a single good net. It occasionally happens, that during the three preceding months, in spite of the greatest efforts, the other fisheries have yielded the desponding inhabitants hardly anything, when a good herring season comes to their relief, and the storehouses are filled in a few days. The herrings are hung up on the scaffolds before the frost sets in, that the water which is in them may drain off before they freeze. This makes them much lighter for carrying on journeys; those which are collected after the frost has commenced become immediately covered with a thin crust of ice, are inferior in flavour, and unwholesome for the dogs.

As the reindeer-hunters return from the Aniuj and from the Tundra about the time of the herring-fishery, this is a period of great animation and interest. If the chase has been successful, universal joy prevails; and it forms for a long time the only subject of conversation. The minutest circumstances, every stratagem and turn of the pursued reindeer, the skill of the hunter, the fleetness and sagacity of the dogs, &c., are all narrated with as great exactness, and in as much detail as if it were a question relating to the movements of hostile armies.

As soon as the frost sets in, the summer fisheries

* The largest herrings are found in the Kolyma; those in the Alasej being smaller, and those in the Jana and Indigirka still less. Hence it would appear that the shoals of these fish move from the west towards the east.

are at an end, and the autumn fishing commences. When the rivers are frozen, horsehair nets are set by cutting an opening in the ice across the stream, and sinking the net below. *Muksuny*, *omuly* (*salmo autumnalis*), and *nelma* (*salmo nelma*), are taken in this way. This kind of fishing is most productive near the sea; it is continued with more or less success till the beginning of December, when the darkness and the intense cold oblige the fishermen to break off from their labours and return to their homes.

Besides the hunting and fishing, there are other matters which cannot well be neglected. Those who have horses must endeavour to make some provision of fodder for them; and sometimes the house must be repaired, or a new one built. Snares must also be set in the forest for the fur animals,* and occasionally visited: this is usually done on horseback, before there is any snow, when the ground is hard frozen; and after snow has fallen, sledges and dogs are used. About this time the reindeer leave the western side of the river and cross to the eastern, and the inhabitants employ a variety of de-

* These traps, called *past*, are a kind of long box, in which the bait is connected with the open lid in such a manner that at the slightest touch the latter closes and keeps the animal shut up till the hunter comes. The Russian inhabitants of Nishne Kolymsk have above 7500 such traps along the banks of the river, on the eastern side, and in the Western Tundra. Sables and foxes are chiefly taken on the eastern shore of the Kolyma, and along the mountain-rivers Philippowka, Pantelejewa, &c., and stone-foxes on the Western Tundra. The wolverine is seldom taken, as he is strong enough to break through the trap if caught. A careful hunter visits his traps at least ten times in a winter; few, however, do it so often, and nearly half the animals which are caught are lost in consequence. The hunters reckon upon about one taken for every ten traps each time they visit them. A very injurious custom prevails among the Tungusi and Jukahiri of carrying away the young whenever they find them, even when still blind; and the number of young foxes destroyed in this way is very considerable.

vices for taking them in the passage. Parties also go out on sledges to hunt the elk and the wild sheep on the Baranow rocks, and others in chase of foxes, sables, and squirrels, by following their tracks in the fresh-fallen snow in sledges drawn by trained dogs. The latter chase is pursued more particularly by the Ukahiri of the Aniuj and Omolon, who live in the mountains and forests, and by the Yakuti of Sredne and Werchne Kolymsk.

On the Tundra, by the seashore, long rows of traps, similar to those above described, are set for the wandering stone-foxes, which are very abundant, but their skins are of inferior value. They are particularly numerous every third year; but if there happen to be many mice, they are less tempted by the bait, which is either a small living animal or a piece of poisoned meat: the latter, however, is said to injure the quality of the fur. Skill in setting the traps is highly valued, and the names of the best fur-hunters are known far and wide; but those who are distinguished by success in chasing the elk and the bear, and who do not shun a conflict with these animals when necessary, are held in still greater esteem. The adroitness, courage, and strength shown in such encounters are favourite subjects of conversation, and, apart from exaggeration, some of the stories related are really extraordinary. The following adventure occurred during my stay in the country. Two hunters, father and son, had gone out on horseback to hunt foxes; they had very poor sport, and were returning almost empty-handed, when by accident they came upon a bear in his den; and, though unprovided with proper weapons for attacking him, they resolved to attempt it. The father placed himself at one entrance of the den, and stopped it with his broad shoulders, while the son, armed only with a light spear, attacked the animal at the other. More tormented than injured by the weapon, the bear sought to escape by the first opening; but

neither his claws nor his teeth could pierce the thick, smooth, well-stretched double fur jacket of the stout Juhakir, who kept his post till his son succeeded in killing his formidable adversary.

Such rash enterprises are not always successful, however. A Russian, descending the Kolyma alone in a boat, saw a very fine elk swimming across the river. Unwilling to let so favourable an opportunity escape, although the boat was much too small to have carried the animal had it been killed, he prepared a noose and threw it over his horns: he then rowed vigorously for the shore, and while the water continued deep, the elk suffered himself to be drawn along; but, as soon as he felt the ground under his feet, he rapidly gained the bank, and made off at full speed for the neighbouring forest, dragging after him the light boat and the unfortunate Russian, who was some time before he could disengage himself. Endless stories of this kind are told, with the minutest circumstances, and occasionally with no little embellishment.

Of all the animals in high northern latitudes, none are so deserving of notice as the dog. The companion of man in all climates, from the islands of the South Sea, where he feeds on bananas, to the Polar Ocean, where he subsists on fish, he here acts a part to which he is unaccustomed in more favoured regions. Necessity has taught the inhabitants of the northern countries to employ these comparatively weak animals for draught. On all the coasts of the Polar Sea, from the Obi to Behring's Straits, in Greenland, Kamtschatka, and in the Kurile Islands, dogs are made to draw the sledges of the inhabitants, loaded with their persons and with goods, and for considerable distances.

The Siberian dogs closely resemble the wolf. They have long, pointed, projecting noses, sharp upright ears, and a long bushy tail. Some have smooth and some curly hair: their colour is various, black,

brown, reddish-brown, white, and spotted. They differ also in size; but it is considered that a good sledge-dog should not be less than two feet seven and a half inches in height, and three feet three quarters of an inch in length (English measure).

Their barking, too, is like the howling of a wolf. They live altogether in the open air: in summer they dig holes in the ground for coolness, or lie in the water to avoid the moschetoes; and in winter they protect themselves by burrowing in the snow, where they lie curled up, with their noses covered by their bushy tails. The female puppies are drowned, except a sufficient number to preserve the stock, the males alone being used in draught. Those born in winter enter on their training the following autumn, but are not used for long journeys until the third year. The feeding and training is a particular art, and much skill is required in driving and guiding them. The best-trained dogs are used for leaders; and as the fleet and steady going of the team, usually consisting of twelve dogs, and the safety of the traveller, depend on the sagacity and docility of the leader, no pains are spared in their education, so that they shall always obey their master's voice, and not be tempted from their course when they come on the scent of game. This last is a point of great difficulty; and sometimes the whole team will in such cases start off, and no endeavours on the part of the driver can stop them. I have frequently had occasion to admire the ingenious devices practised by the well-trained leader to divert the other dogs from their pursuit; and, when other means fail, he will suddenly wheel round, and by barking, as if he had come on a new scent, try to induce them to follow him. In travelling across the wide Tundra in dark nights, or when the vast plain is veiled in impenetrable mist, in storms or in tempests of snow, when the traveller is in danger of missing the sheltering *powarna*

and of perishing on the way, he frequently owes his safety to a good leader. If the animal has ever before been on the plain, and has stopped with his master at the *powarna*, he will be sure to bring the sledge to it, though deeply buried in the snow; and when he has reached it he will suddenly stop, and significantly indicate to his master the spot where he must dig.

Nor are the dogs scarcely less useful in summer; they tow the boats up the rivers, and it is curious to observe how readily they obey their master's voice, either in halting or in changing the bank of the stream. On hearing his call they plunge instantly into the water, dragging the towing-line after them, swim to the opposite shore, and, on reaching it, replace themselves in order, and wait his command to go on. Sometimes those who have no horses use dogs instead of them in their fowling excursions, to draw their light boats from one lake or river to another. In short, the dog is no less indispensable to the settled inhabitant of this country, than is the tame reindeer to the nomadic tribes; and they so regard it.* We saw a remarkable instance of this during the terrible sickness, which in the year 1821 carried off the greater part of these useful animals. An unfortunate Juhakir family had only two dogs left out of twenty, and these were just born, and, indeed, still blind. The mother dying, the wife of the Juhakir determined to nurse the two puppies with her own child, rather than lose the

* It was once unwisely proposed to forbid the keeping of dogs on account of the quantity of fish required for their support, which is thus withdrawn from the food of the inhabitants. Each team of twelve dogs requires daily from fifty to seventy herrings. But if this measure had been adopted, so far from increasing the quantity of food at the command of the inhabitants, it would have deprived them of one of their chief means of procuring it, as was most clearly proved at the time of the great mortality among these animals in 1821 and 1823. Happily, this highly injudicious proposal was rejected by the government.

last remains of their former wealth. She did so, and was rewarded for it, for her two nurslings lived, and became the parents of a new and vigorous progeny.

In the year 1822, when the inhabitants had lost most of their dogs by the prevailing sickness, they were reduced to a melancholy condition; they had themselves to draw home their fuel; both time and strength failed them in bringing in the fish they had caught in distant places; while thus occupied, too, the season passed away for fowling and fur-hunting; and a general and severe famine, in which numbers perished, was the consequence. Horses can never be substituted for dogs, as the severity of the climate and the shortness of the summer make it impossible to provide sufficient fodder for them; and, besides, these light animals move rapidly over the deep snow, where the heavy horse would sink at every step.

Having thus described the out-of-door employments of the inhabitants of this district, let us accompany one of them into his habitation, at the close of summer, when he and his family rest from their laborious efforts, to enjoy domestic life after their fashion. The walls are now calked afresh with moss, and new plastered with clay, and a solid mound of earth is heaped up on the outside as high as the windows. All this is accomplished before December; and then the long winter nights assemble the members of the family around the hearth. The light of the fire, and that of one or more train-oil lamps, glimmer through the ice windows; and from the low chimneys rise high columns of red smoke, mingled with bright sparks, thrown off by the resinous wood. The dogs are outside, either on or burrowed in the snow, and from time to time their howling interrupts the general silence. It is so loud as to be heard at a great distance, and is usually repeated at intervals of from six to eight hours, except

when the moon shines, when it is much more frequent.

A low entrance, over which hangs the thick skin of a white bear or of a reindeer, leads into the dwelling-room. There the father and his sons are seen making nets of horsehair, and preparing bows, arrows, spears, &c.; while the women, seated on the benches or on the ground, are employed in sewing the skins which the men have brought home into different garments, in doing which they use the sinews of the reindeer instead of thread. Two large iron kettles are hanging over the fire, in which fish is boiling for the dogs. One of the women is engaged in preparing the frugal supper, which usually consists either of fish, or of reindeer meat boiled or fried in train oil. As an occasional delicacy, they have baked cakes of fish-roe, or of dried and finely-pounded *muksuns*, which are their substitute for meal. The cakes are sometimes flavoured with finely-chopped fish-bellies, or with reindeer meat and powdered *makarscha*, mixed with train oil. If a travelling guest chances to arrive, the best that the larder affords is produced; *strugánina*, the best *jukvla*, smoked reindeer tongues, melted reindeer fat, frozen Jakuti butter, frozen *moros'kho*, &c. The table, which stands at the upper end of the apartment, is covered, instead of a cloth, with several folds of an old fishing-net; and in place of napkins, thin rolled-up shavings of wood are used: this last, however, may be considered a town refinement. Salt seldom appears; and when it is produced, it is only for the guest: the natives never use it, and even dislike it. In the little towns of Nishne and Sredne Kolymsk, the richer people have tea and Chinese sugar-candy; and *jukola* are eaten at tea instead of biscuit. Bread is everywhere rare. From the meal, which is so dear that only the more wealthy can buy it, a drink called *saturan* is prepared: the meal is roasted in a pan, and butter or train oil mixed with it so as to

bring it to a paste, which is then thinned by the addition of boiling water. When this drink is carefully made, and with good butter, it has an agreeable flavour, and is very nourishing and warming: it may be compared to Rumford's "spare soup." It is drunk hot, like tea, out of glasses or cups. Among the daily employments of the young women, fetching water for the household occupies a prominent place: they go for this purpose at certain hours of the day to holes cut in the ice, which, like the fountains and village wells in Germany and the rest of Europe, are favourite places for gossiping. About noon the daughter of the house puts on her best attire, and runs down to the river with her buckets on her little sledge, where, while she is filling them, she hears and tells the news of the day. Occasionally some of the young men are present; and if one of them fills and carries the water-vessels, it is looked upon as the omen of an intended marriage.

*Swatki** and Easter time, and particularly the *Masslaniza*, give a temporary animation to this otherwise monotonous life. On Christmas and Easter days the bells ring, and the inhabitants go to church in their best attire: after the service is over, the priest visits each cottage separately, and blesses it, sprinkling it with holy water.† During the *Swatki* and the *Masslaniza*, there are frequent evening parties for conversation, games, singing, and sometimes

* Swatki is the time from Christmas to the feast of the three holy kings (twelfth night). Masslaniza is the week before Lent: both are seasons of general festivity throughout Russia.

† This is a general custom thoughout Russia: every new house, before it is occupied, is blessed by the priest, and from time to time the ceremony is renewed. Nor is it confined to dwellings: almost every kind of structure, public or private, must undergo such purification. There is doubtless much of superstition in this ceremony, and still we cannot but respect the religious feeling from which it is derived; it brings to mind the saying of the Psalmist: *Except the Lord build the house, they labour in vain that build it.—Am. Ed.*

dancing, for which last, however, their huts are but poorly adapted. On these occasions they have a supper, at which tea is drunk in great quantities, ten cups apiece being quite common; of course it is taken without milk, and almost without sugar, on account of its great price, one little piece only being given to each individual, which suffices him for all that he drinks. A few rich people make use of teapots; but generally the tea is boiled in a large kettle, to make it go farther. Next to tea, brandy is in the greatest request at these parties, and is sometimes drunk in large quantities, notwithstanding its very high price.

At the *Masslaniza*, they indulge in the Russian pastimes of sledging and sliding down ice-hills; a curious tribute to national customs, inasmuch as they never drive in any other vehicles than sledges, and over no other roads than snow and ice.

Such is the monotonous life of the inhabitants of these icy deserts. Happily for them, they have no idea of any other enjoyments; and if the fisheries and hunting excursions have been productive, so that they are safe from hunger, and if tea and brandy are not wanting, they are content, and in their way to a certain degree happy. The inhabitants of Nishne Kolymsk are a vigorous race, usually above the middle height, and well looking. They have few diseases, and one sees among them many who have preserved their activity to old age. This is probably due in a great measure to the necessity they are under of taking strong exercise, and of being much in the open air. The walking in snow-shoes is particularly beneficial, by bringing the muscular powers into full action. The scurvy, which rages so dreadfully to the westward, is very rare here, which may be owing, possibly, to the provisions being frozen instead of salted.

CHAPTER IV.

Nishne Kolymsk.—Domestic Arrangements.—Preparations for Prosecuting the Objects of the Expedition.—Well-founded Doubts respecting the Discoveries of Sergeant Andrejew.—Arrival of the English Traveller, Captain Cochrane.—The New Year.—Evening Party.—Arrival of the Pilot Kosmin.—Preparations for a Journey with Dogs and Sledges.—Necessary Deviation from the Original Plan.—Tidings of the Arrival of the Tschuktschi on the Lesser Aniuj.—Departure of M. Matiuschkin for Ostrownoje.

NISHNE KOLYMSK was founded, according to Fisher, in 1644, on the northern arm of the river, where a small fortress or *ostrog*, a church, and some *jurti* were built. The settlement was subsequently removed to its present site, on a low island in the other branch, which is of more convenient access. It is situated, according to our observations, in lat. 68° 32′, and long. 160° 35′. The variation of the magnetic needle is here 9° 56′ E., and the dip 77° 33½′ N.

The river at this place is three wersts broad. The view to the south is bounded by the Aniuj Mountains, which are connected with the Pantelejew range, and the Surowoj rocks: to the north and west the eye loses itself in the barren Tundra. The *ostrog* consists of a wooden palisade, with small towers at the four corners, and within which is a large building, where the authorities of the place reside, and where there are magazines for the most part empty: two of these still contain some stores which were prepared for the expedition of Lieutenant Laptew* in 1739, and for the vessels of Captains

* Laptew spent three years in examining the coast west of the Lena.—*Am. Ed.*

Billings and Sarytschew. Besides the *ostrog*, the village consists of a church and forty-two houses.

My house, which was one of the largest in the place, consisted of two rooms, each twelve feet square. The outer room, with a stove, was assigned to my attendants, and served also as a kitchen; the inner one, which had an open hearth, I took for myself: each room had a small window with a thick plate of ice. A bench for a bed, a little rickety table, and a wooden stool, constituted my furniture: a porch which I built outside somewhat lessened the cold of the house, and was very useful as a storeroom.

Half an hour after my arrival, M. Matiuschkin returned from the mouth of the Kolyma, where he had been to see what could be spared to us from the produce of the fishery. It may well be supposed that we were not a little rejoiced to meet, and that we had a thousand things to ask and to tell each other. To my great disappointment, I learned that when he arrived at Sredne Kolymsk, on the 2d of October, he found that the commissioner of that place had not even begun to execute the instructions which he had received in the summer from the governor at Jakuzk relative to our expedition. No store of fish had been procured, nor any materials for the erection of an observatory; neither had any steps been taken, as I had desired, towards the establishment of a winter-house and deposite of provisions at the Baranow rocks. The commissioner's only excuse was, that he had not supposed we should actually arrive this year.

Our operations must have been even more seriously deranged than they were by this neglect, but for the energetic and successful exertions of M. Matiuschkin. During his short stay he had collected more than half the necessary provision of fish; and in spite of the intense cold, which made the carpenter's axe snap like glass, he had got a tower erected

on the flat roof of my house for an observatory, with windows to the four cardinal points. It was completed a few days after my arrival, and the instruments for the necessary astronomical observations placed in it. My first care was directed to obtaining what was necessary for our journey; and for this purpose I invited the richest people of the place, and the elders of the different tribes along the neighbouring rivers, to meet me on an appointed day. They came on the 25th of November, and our first step was to form a tariff of prices, which was entirely satisfactory to the inhabitants. We next discussed what articles each would be able to furnish, and at what time. The Jukahiri of the Aniuj, who had had a very successful reindeer hunt, were to supply the skins necessary for a winter tent, and a great quantity of reindeer bones, which were to be pounded for the dogs. The Jukahiri of the Omolon offered to provide a good boat, built of birch-wood, and the materials for making sledges; and the settlers along the Kolyma were to furnish frozen fish. The dried fish had to be brought from 800 wersts up the river, where the fishery had been more productive than near the mouth. There still remained a most essential point, the providing a sufficient number of good dogs to draw the sledges. This was undertaken by a Cossack who had accompanied M. Hedenström, and who was generally considered to have more knowledge than any one else of the qualities and the proper management of these animals.

Everything was now in train, and nothing remained but that they should all fulfil their engagements. I met with many difficulties in this respect, however, which were increased by a sort of distrust entertained by the people in respect to payment, and by the want of good-will on the part of the local authorities. The commissioner of the district made every effort to discourage us. He represent-

ed the poverty of the inhabitants to be such, that our extensive demands would overburden their resources; and described, in the most exaggerated terms, the difficulties and dangers we should have to encounter. He assured us the dogs were too weak, and their drivers inexperienced and untrustworthy; and dwelt on the barbarity of the Tschuktschi, whom he described as the most dangerous and cruel of men. Though I attached but little importance to his accounts of the perils that awaited us, I did not feel at liberty, without farther knowledge of the subject, to disregard his repeated representations of the injury which he said would be done to the inhabitants by complying with my requisitions. I accordingly abated them so much that we ourselves subsequently suffered. In the following years, however, when I had become well acquainted with the circumstances of the country, I found that I could procure all that was necessary for the expedition, not only without injury, but with positive advantage to the inhabitants.

My instructions from the Admiralty directed that we should proceed the first year to Cape Schelagskoj, where the expedition was to be divided into two parts; that with one of these I should advance in search of the Northern land, which the Cossack Andrejew was supposed to have seen, and that the other division, with an officer, should continue the examination of the coast as far to the eastward as circumstances would permit. To do this we should require fifty sledges, six hundred dogs, and at least forty days' provision; and as it was necessary to start in February, there remained only three months for preparation.

We endeavoured to collect from the inhabitants all the information they could give us relative to the country, and everything that was remembered among them respecting earlier travellers, having any bearing on the objects we had in view. They

knew a great deal about the three officers* who were here in 1767, but could tell us very little about Sergeant Andrejew, who was here only five years before, *i. e.*, in 1762. They had learned, generally, that he had been to the Indigirka, and afterward to the Bear Islands, but were ignorant of his supposed discoveries, which were included in our most recent charts; and when we spoke of a land north of the Bear Islands, and of traces of a numerous nomade race in that direction, they treated it as a fable. Some of their own people had accompanied Andrejew on that journey: how then could the discovery and existence of a large inhabited land have been either unknown or forgotten among them?† Many circumstances were related to us respecting Pawluzki's proceedings as early as 1731.

These and similar inquiries, the duties of the observatory, practising in driving sledges, experiments on the distances which our dogs could travel in a given time, and various other preparations for our journey, so fully occupied us, that the time passed rapidly away. The polar night had set in on the 22d of November; and the beauty of the varied forms of the Aurora, seen on the deep azure of the clear northern sky, was a source of unwearied enjoyment to us almost every evening.

On the 2d of December, probably in consequence of the violent west and northwest winds, the water from the sea was suddenly driven into the Kolyma with such force as to produce an opposite current to that of the river, flooding the banks, breaking up the ice, and carrying away the fishing-nets which

* Geodets Leontjew, Lyssow, and Pushkarow.

† The account given by Andrejew was, that, after driving to the north, on the ice, about fifty wersts from the mouth of the Krestowoi, they discovered a group of inhabited islands, containing traces of a much more numerous population at some former period: among other things, he mentions the remains of a fort.—*Am. Ed.*

had been placed beneath it. The owners of the nets comforted themselves with the hope, however, that the influx of water would bring with it such a quantity of fish, that the increased productiveness of the winter-fishery would more than compensate for the loss of their nets; and so it proved.

The 31st of December surprised us with the arrival of the well-known English pedestrian, Captain Cochrane.* We were all not a little pleased by this agreeable addition to our very limited circle; subjects of conversation were abundant, and we sat talking till long after the beginning of the new year, which came in with a temperature of —51°.

The noonday sun, which ought to have been just visible above the horizon, was intercepted by the hills which bound the plain; a gray mist lay heavy on the snow-covered surface; the sky became of a whitish colour, and the cold increased on the 3d and 4th of January to —55°, and on the 5th the thermometer stood for twenty-four hours at —57°. Breathing became difficult, and the panes of ice in the windows cracked. Though sitting close to a large fire, we were not able to lay aside any part of our fur-clothing; and when I wanted to write I had to keep the inkstand in hot water. At night, when the fire was allowed to go out for a short time, our bedclothes became covered with a thick snow-like rime, and my guest, in particular, always complained in the morning that his nose was frozen.

The nearest mountains to the south appeared under all sorts of singular forms, and the more distant

* He had not only been hospitably entertained everywhere by the way, but the governor at Jakuzk had given him a Cossack to accompany him to Nishne Kolymsk, and that part of his foot-journey, at least, was made on horseback and in sledges, free of expense. He expressed a wish to join our expedition over the ice; but the great difficulty of obtaining means of transport, provisions, &c., for each individual, made me consider it advisable to decline the offer.

ones as though they were inverted, with their summits downward; while the river was apparently narrowed to such a degree, that the opposite bank seemed to be close in front of our houses.

As the continued intensity of the cold made it impossible to go on with their business of placing nets under the ice, the inhabitants returned from fishing at the mouth of the river. Still the street seemed deserted, for no one who could help it stirred from the fireside; late in the evening especially, when the deathlike silence was only broken, at regular intervals, by the howling of some hundreds of sledge-dogs.

We were told that in former years, when the fisheries were more productive, and great numbers of elks visited the Kolmya, Nishne Kolymsk had been remarkable for its winter-festivities; but the inhabitants complained that these were quite at an end. To afford them a little enjoyment in this way, and to show our guest some of the amusements of the place, I invited all the principal inhabitants for Twelfth Night, and engaged for the evening one of the best and roomiest houses, which belonged to a Cossack who could play the violin. The assembly-room, which was about eighteen feet square, was lighted up with train-oil lamps, the walls were ornamented with a little drapery, and the floor was strewed with yellow sand. The refreshments for the ladies were tea, some lumps of white sugar, and cedar-nuts. The supper consisted of fish-cakes, *struganina*, dried fish, and frozen reindeer marrow. Our guests arrived at five o'clock, in their best furs, and, after the first burst of admiration at our arrangements, the ladies took their seats and began to sing national songs; afterward the younger ones played at various games, and danced with slow and apparently laborious effort to the sound of the old hunter's violin. At ten o'clock the company took their leave, with endless thanks for their entertain-

ment; nor were these mere words of course, for a year or two after they still spoke of our agreeable and brilliant party as a bright spot in their remembrance.

Next day we went to visit the remains of the two vessels of Captain Billings, which a flood had carried to some distance inland from the river. Though they had been exposed for nearly fifty years to the weather, the wood was still sound.

On the 2d of February, the pilot Kosmin arrived with a large quantity of necessaries for the expedition, which he had brought from Jakuzk. He had taken advantage of the slowness of his journey to draw up an exact topographical description of the almost unknown country through which he passed.

Besides more important matters, he brought us a welcome and long-untasted addition to our very scanty bill of fare, namely, forty pounds of frozen reindeer meat, and some milk and cream frozen, as is customary in Siberia, in round cakes, which keep good for a long time.

We were now approaching the most animated period of the year at Nishne Kolymsk, namely, when the caravan from Jakuzk, consisting of about twenty merchants, each with from ten to forty horses loaded with goods, halt here for a few days, on their way to the great Tschuktschi fair at Ostrownoje, and dispose of part of their wares to the inhabitants of the district, who assemble from a great distance. The richer traders now hasten their return from the banks of the Omolon, where they have passed the month of January in obtaining from the wandering Tungusi a large quantity of furs in exchange for a little tea, tobacco, and brandy. The Tungusi have a strong passion for the latter, and the traders too often avail themselves to the utmost of this weakness.

The prices this year were:

	Roubles.
Red fox	8 to 10
Black fox	50 " 150
White stone-fox	2½ " 3
Blue fox	7 " 10
Sable*	10 " 25

The prices of the principal articles brought by the Jakuzk merchants were as follows:

	Roubles.
1 lb. Circassian leaf tobacco	3½
1 lb. white sugar	4½
1 lb. Chinese sugar-candy	3
1 lb. of tea of an inferior quality	9
1 lb. of fine thread	3½
1 piece of *kitajka* (Chinese cotton), 7 yards, or 9 *arschins*†	10
1 piece of half-silk stuff, about 17 yards	50
1 *arschin* of coarse linen	1
1 figured cotton handkerchief	6

The superintendent of the district usually arrives soon after the beginning of the fair, for the purpose of embracing this favourable opportunity for collecting the crown dues: he likewise examines and decides any differences there may be among the inhabitants; and thus his visit, by giving scope to their litigious disposition, often brings dissension where cheerfulness and harmony before prevailed. Meanwhile we had succeeded in obtaining a large quantity of fish for ourselves and our dogs. The supply for the latter was estimated at 81,944 herrings.‡

As the time for our departure approached, I found that it would be impossible to obtain for another

* The prices of sables vary greatly in different years. In 1821 a fine skin cost 40 roubles, and in the following year only 15 roubles.

† The Russian *arschin* is twenty-eight inches.

‡ It included also a quantity of reindeer bones. It is customary here, in estimating such supplies, to reduce every sort of provision for dogs to an equivalent number of herrings, eight or ten of which are considered, when dried, a proper daily allowance for a sledge-dog.

month the necessary number of drivers, sledges, and, above all, of dogs, for our intended expedition. Under these circumstances I decided on employing the intervening time in surveying the coast to the eastward as far as our means would permit, with the few sledges which were ready, and on sending M. Matiuschkin for the same period to Ostrownoje, to gain some knowledge of the Tschuktschi who were accustomed to resort there to the fair, and to purchase from them* walrus skins and whalebone for our sledges. But that which I especially recommended to him was to endeavour to establish a friendly understanding with that suspicious people, and to tranquillize their minds as to the object of our visit to their shores, by informing them that we were in search of a navigable passage by which ships would be able to bring them a larger and cheaper supply of tobacco and other articles. He also took with him a good stock of tobacco, beads, scissors, &c., &c., as presents to their chiefs.

On the 14th of February I despatched my three travelling-sledges, with the proper number of dogs, under the care of three Cossacks, one of whom understood the Tschuktschi language, to an island at the mouth of the eastern branch of the Kolyma, where our provisions were already deposited. While waiting my arrival, the dogs were to be given good food and ample rest, to improve their condition to the utmost.

A few days afterward, the Cossack who had been sent by the superintendent to Ostrownoje to give notice of the approach of the Tschuktschi, returned with information that a small party from Tschaun

* Thongs of walrus skin are used here instead of iron fastenings, and are very durable: pieces of whalebone under the wooden runners make the sledge glide along the ice far more smoothly, nor are they so liable as wood to be injured by the salt which is left on it, in places where it has been overflowed by sea-water.

Bay had arrived on the 8th of February within 90 wersts of Ostrownoje, and that they were the forerunners of a much more numerous caravan from the neighbourhood of Behring's Straits. The Jakuzk merchants accordingly soon took their departure in hired sledges: they were accompanied by the superintendent, and were followed on the 4th of March by Captain Cochrane and M. Matiuschkin.* Captain Cochrane intended to join the Tschuktschi caravan on their return to Tschukotskoj Noss and Behring's Straits, and to cross over from thence to the north-west coast of America; but when he became better acquainted with the character of this people, he gave up his plan and returned to Nishne Kolymsk.

CHAPTER V.

First Ice-journey in Sledges over the Sea.—Departure from Nishne Kolymsk.—Sucharnoje Island.—Baranow Rocks.—Flat, low Coast.—Great Baranow River.—Cold.—First Traces of the Tschuktschi.—Meteor.—Cape Schelagskoj.—Kosmin Rock.—Wollok.—Cape Matiuschkin.—Arautan Island.—Loss of Provisions.—Return to Nishne Kolymsk.

The seacoast from the Kolyma to Cape Schelagskoj is wholly uninhabited; on the one side the occasional excursions of the Russians terminate at the Baranow Rocks, and on the other the Tschuktschi do not cross the larger Baranow River. The intervening eighty wersts of coast are consequently unvisited. The wide mossy plains and valleys inland are wandered over by those warlike Tschuktschi who have maintained their independence, and who bring with them immense herds of reindeer. Stran-

* The distance to Ostrownoje is 250 wersts; and the usual price of a sledge for the journey from Kolymsk and back is about 100 roubles.

gers they regard with great suspicion, and melancholy examples have shown the dangers incurred by intruding upon their territory. Our sledge-drivers were not entirely free from the fear of these people generally entertained by the inhabitants of Kolymsk. The party consisted of M. Kosmin and myself, and the drivers of nine sledges. Only three of the latter were to accompany us the whole way; the other six were to return with their sledges as soon as the provisions they carried should be disposed of.

We left Nishne Kolymsk on the 19th of February, and on the 21st we reached Sucharnoje Island, at the mouth of the Kolyma, where the rest of our party were waiting for us. The next day was employed in arranging our loads, the different articles we had to carry being as follows: a conical tent of reindeer skin, with a light framework formed of six long, thin poles, two hatchets, an iron plate on which we could light a fire, a trivet, a soup-kettle, a tea-kettle, a pocket-lantern with a few wax candles, some changes of linen, a bearskin apiece to sleep on, and a double reindeer skin coverlet for every two persons. Our instruments were, two chronometers, a seconds' watch, a sextant and artificial horizon, a spirit thermometer, three azimuth compasses, one of which had a prism, two telescopes, a measuring-line, and a few other trifles. The provisions for five men for one month were, 100 lbs. of rye biscuit, 60 lbs. of meat, 10 lbs. of portable soup, 2 lbs. of tea, 4 lbs. of sugar-candy, 8 lbs. of grits, 3 lbs. of salt, 39 rations of spirits, 12 lbs. of tobacco, and 200 of the best smoked *juchala*, each equivalent to about five herrings. Our clothing consisted of a *parka*,* a large *kuchlanka*, leather boots lined with fur, a fur cap, and gloves of reindeer skin. We had each a gun and fifty cartridges, a pike, a large knife worn in the girdle, and the means of striking fire. For our dogs we

* The reindeer skin shirt described in page 68.

had 2400 frozen fresh herrings, 790 large *muksun*, *juchala*, and 1200 *jukola*, equivalent in all to about 8150 dried herrings. The six provision-sledges carried the greater part of the stores, but a portion was also placed on the travelling ones. The loading of each sledge, weighing about 25 pood (900 lbs. avoirdupois), was distributed along its entire length, and covered with leather. The whole was bound so tightly together with thongs that the vehicle might be overturned without anything being displaced or injured. The driver of the sledge sits sideways on the middle of it, or, rather, poises himself with his feet on the runners, ready at any instant to spring off to preserve or restore the equilibrium, holding on by a thong stretched lengthways of the sledge for that purpose. He also carries a large stick, pointed with iron at one end, and having bells at the other, which he uses for guiding and driving the dogs, and which sometimes serves him for a support. It was in this manner that M. Kosmin and myself each sat behind our driver, ready, like him, to spring from the sledge whenever it lost its balance, which was continually happening, as the track was often very uneven. Though the sledges were thus heavily loaded, they glided so smoothly over the hard-frozen snow that it was not difficult to push them along with one hand; and when the surface was even, the dogs went at the rate of ten or twelve wersts an hour.

On the 21st of February the temperature was —26°; but it rose at noon to 0°.5. Though the sun was still very low, M. Kosmin succeeded in taking a meridian altitude (using the artificial horizon), and found the latitude to be 69° 31′. By trigonometrical measurement from Nishne Kolymsk, Sucharnoje is in the longitude of 161° 44′: the variation of the magnetic needle was 13½° E.

On the 22d the provision-sledges started at daybreak for the lesser Baranow Rock, forty-one wersts distant, and we followed soon after. We had ar-

ranged that my sledge should always lead the way, and that M. Kosmin's should bring up the rear. Each of us observed the direction of the course, and estimated the distances from point to point according to the paces of the dogs, with which we had made ourselves acquainted by experiments at Nishne Kolymsk.

Instead of going round Bear Cape, we crossed the isthmus which connects it with the Continent. The snow was hard and even, and our dogs ran so fast that the sledges often overset in spite of all the balancing of our drivers. At half past three we arrived at the *powarna* where we were to sleep. It was on the bank of a small river, and near a large wooden cross erected by Captain Billings, and still in good preservation. The provision-sledges, which started nearly two hours before us, did not arrive till later, owing to the inferiority of their dogs. Seen from this place, the ice of the sea appeared smooth, a thick mist preventing a view of the horizon to the north.

Finding our lodging filled with snow and ice, which it would have required too much time to remove through the door, we took off the boards which served as a roof, and in less than half an hour we had cleared away the snow, replaced the roof, and lighted a fire. Unfortunately, the hut was so small that only four persons could be accommodated in it, and they were so close to the fire as to singe their clothes: the other seven were obliged to sleep in the tent, where they were less warm, but much drier, as the melting snow ran in streams down the walls of the hut.

We passed the evening in entering and comparing our observations, which we found, to our great satisfaction, agreed extremely well with the very exact survey of this part of the coast by Captain Billings; thus convincing us that we might place confidence in the accuracy of the methods we had adopted.

The seacoast had been hitherto everywhere flat except at the promontories and projecting tongues of land, which form steep, rocky elevations. The right bank of the Kolyma, which consists principally of black slate, was covered with driftwood; and nine or ten miles from the Balagan, at Sucharnoje, we saw a wooden tower erected by Lieutenant Laptew in 1739, to serve as a landmark on entering the river from the sea.

We resumed our journey the next morning at daybreak; the weather being clear and pleasant, with a light breeze from the S.W., the thermometer at —29° in the morning, —20° at noon, and —26° in the evening. We drove rapidly over the smooth ice along the seacoast, which became more and more steep and rocky; and having gone forty-two wersts, we halted for the night at a *powarna* not far from the greater Baranow Rock. We saw this day a great number of those remarkable masses of stone mentioned by Captain Sarytschew, which sometimes resemble ruins of vast buildings, and sometimes colossal figures of men and animals. I shall have occasion to speak farther of these singular rocks.

On the 24th of February we proceeded on our journey with a temperature of —24°, which afterward sunk to —31°. We left to the north the mountainous promontory of the greater Baranow Rock, which stretches a considerable distance into the sea, and took our way across a narrow strip of land behind it. The shore soon assumed quite a different aspect, the rocks and cliffs disappearing, and the flat coast was only now and then interrupted by slight elevations. After travelling thirty-four wersts, we arrived at the mouth of a little river, the transparent ice of which promised us pure and good water; and as there was also plenty of driftwood, we determined to halt for the night. This is the extreme eastern point of the most distant hunting excursions of the inhabitants of the district. The coast beyond

had not been visited by Russians since Schalaurow's voyage in 1765.

I determined to deposite part of our provisions at this place against our return. To secure them from the depredations of the stone-foxes and wolverines, we drove four posts, each nine feet high, into the snow, and raised upon them a large rough box formed of driftwood, in which we placed the stores, and covered them over with wood and snow. This was our first encampment. A few minutes sufficed to pitch our tent, which was twelve feet broad at the bottom, and ten feet high in the centre. A fire in the middle served both for cooking and warmth, though it filled the tent with a thick, pungent smoke, notwithstanding there was a small hole in the top to let it escape. The entrance was through a narrow opening on the leeside, over which we hung a skin. In the high winds which are usual here, our light shelter was in constant motion, bending from side to side; but, by heaping a bank of snow round it, we kept it both steadier and warmer.

As soon as the tent was pitched and the fire lighted, we hastened to fill the kettle with clean ice or snow, and to make it boil as soon as possible, for tea was our most welcome and exhilarating refreshment: we generally drank ten or twelve cups each. Sometimes we had a piece of rye biscuit or dried fish to eat with it.

Between tea and supper the sledge-drivers went out to attend and feed their dogs, which were always tied up at night, lest they should be tempted away by the scent of some wild animal. Meanwhile we were engaged in comparing our observations, and in laying down in the map the ground we had gone over in the course of the day: a task which the severe cold and the smoke in the tent sometimes made not a little difficult. Supper always consisted of a single dish; that is, soup, made of fish or of meat, as long as we had any of the latter. It was

eaten by us out of the kettle in which it had been boiled. Soon after we had finished our meal the whole party lay down to sleep. On account of the cold we could not lay aside any part of our travelling dress, but we regularly changed our boots and stockings every evening, and hung those we had taken off, with our fur caps and gloves, on the tent-poles to dry. This is an essential precaution, particularly in respect to stockings, for with damp clothing there is the greatest risk of the part being frozen. We always spread the bearskins between the frozen ground and ourselves, and the fur coverings over us; and, from being well tired, we usually slept very soundly. As long as all the sledge-drivers remained with us, we were so crowded that we had to place ourselves like the spokes of a wheel, with our feet towards the fire and our heads against the side of the tent. In the morning we generally rose at six, lit the fire, and washed ourselves before it with fresh snow: we then took some tea, and immediately after it a meal which served for breakfast and dinner, and which was similar to the supper of the night previous. The tent was then struck, and everything packed and stowed on the sledges; and at nine we usually took our departure. This arrangement was adhered to throughout the journey.

On the 25th of February we had a cutting east wind, with a temperature of —24°, and a thick fall of snow. We proceeded notwithstanding, but, after accomplishing twenty-four wersts, our dogs could no longer face the storm, and we were obliged to halt on the flat coast. The snow continued to fall throughout the night, so that our tent was quite buried. This, however, served to shelter us from the storm, and we enjoyed both the unusual warmth and steadiness of our frail domicil; but, to balance this advantage, we found, the next morning, that the snow in immediate contact with the covering of the tent had partially melted, and formed a crust of ice

upon it, which rendered it very stiff and hard to pack, and also much heavier than it was before.

It was quite calm, and though the thermometer still showed —24°, the air seemed far milder than on the previous day. The sea was covered with a smooth, solid surface of snow, over which the ice-covered runners* of our sledges glided with so much ease, that the dogs moved on very rapidly without being urged. We drove at a distance of from 50 to 300 fathoms from the coast, which is here low and flat. As far as the eye can reach, it discovers nothing but one level, unvaried surface of snow. One becomes accustomed to everything, but the first impressions produced by the uniformity of this vast shroud are indescribable. We hailed the sight of a heap of driftwood with pleasure, and even the closing in of darkness was a welcome relief.

After proceeding twenty-five wersts from our last night's station, I halted earlier than usual for the purpose of taking lunar distances; the sun's altitude being so low that we were obliged to have recourse to the stars at night to determine the time. Our lunars gave 166° 11′ as the longitude, while by our chronometers it was 5′ more easterly. The chronometers had suffered, no doubt, from the sudden changes of temperature, or from shocks by the frequent oversetting of the sledges, as they differed also greatly from each other.

We built here another *sajba*, in which we deposited provisions against our return, and sent back the empty sledges. As the fire burned up, the ice which incrusted our tent began to melt, and produced a

* Every evening the sledges were turned over, and water was poured on the runners, to form on them a thin crust of ice, which makes them glide more smoothly over the snow. This operation, which is called *wodjat*, has the additional advantage of protecting the runners. The drivers carefully avoid places where the ice is not covered with snow, where the *wodjat* soon wears off.

close damp, which was so oppressive that, in spite of the cold, we were frequently obliged to go into the open air. The temperature sank in the night to —37°, with a cutting wind from the S.W.; so that, notwithstanding our furs, we were several times under the necessity of warming ourselves by exercise. The next morning M. Kosmin complained in quite an unusual manner of his feet. We advised him to change his boots and stockings, which he had omitted to do the night before. When the boots were taken off, we saw with no little alarm that the stockings were frozen to his feet. Drawing them off with great care, we found a layer of ice of the thickness of a line between the stockings and feet. Happily, the latter had not yet frozen, and by gentle rubbing with a little brandy they were soon restored. This instance gave us a farther warning of the dangerous consequences, in intense cold, of sleeping in damp clothing, whether arising from external causes or from evaporation from the skin. At noon, being then $1\frac{3}{4}$ wersts north of the line of the coast, I found the latitude by observation to be 69° 30′, the longitude by reckoning 166° 27′, and the variation $17\frac{1}{2}$ east.

The increasing cold and violent wind made travelling very difficult. To guard the dogs from being frozen, the drivers were obliged to put clothing on their bodies, and a kind of boots on their feet, which greatly impeded their running; while the intensity of the frost rendered the snow loose and granular, so that the sledge-runners no longer glided smoothly over its surface. We could therefore accomplish only 26 wersts before we halted for the night of the 27th, at the mouth of a river of some importance, known by the dwellers on the banks of the lesser Aniuj under the name of the great Baranika. We saw here immense quantities of driftwood, and, indeed, along the whole strip of flat coast which we had passed during the day. To the south and south-

west of our sleeping-place were distant mountains, extending to the east bank of the river. The coast here makes a bend towards the north, and gradually rises to a height of six fathoms.

Immediately north of us there appeared a white line running apparently parallel to the coast, which we afterward found to be large *torossy*, or hummocks of ice, which, seen at a distance, may easily be mistaken for land.

During the night I took some distances of the moon and Pollux, but failed in determining the longitude; for when about to take altitudes of Capella for time, I found that crystals were forming in the mercury of the artificial horizon, by which its surface, without absolutely freezing, was rendered too uneven to give a true reflection. Indeed, our observations generally, with instruments of any kind, were made with difficulty, owing to the intense cold. We were obliged to cover with leather all those parts of our sextants which came in contact with the hand or the eye, otherwise the skin instantly froze to the metal. During an observation, and particularly when reading the divisions on the arc of the sextant, we had carefully to hold our breath, otherwise the surface became obscured by a thin coat of ice or a kind of rime. Indeed, this frequently happened from the mere evaporation from the skin, when we were at all warm. Still, by practice, we were enabled to use the sextant at a temperature of —36°; and to note with sufficient exactness the degrees, minutes, and seconds on the arc, by the faint light of a hand-lantern. The chronometers, however, stopped: I had been afraid of this, and had tried to guard against it by always wearing them during the day, and by putting them at night in a box which I wrapped in thick furs, and placed by my side under the coverlet; but, in spite of all these precautions, the cold congealed the oil in the works.

On the 28th of February, the temperature varied from —29° to —25°, with a fresh S.W. breeze, but as the wind was in our backs we felt it less. The day was so foggy that we could scarcely distinguish the line of coast on our right; but a high promontory being visible through the mist, we directed our course to it, and pitched our tent under the shelter of a steep bank, having made only 27 wersts, on account of the loose and granular state of the snow. We climbed the hill, and found at the top some boards, reindeer-sinews, and burned wood, which showed that there had been a habitation there of some kind. Towards evening the weather cleared, and M. Kosmin was enabled to take some lunar distances, by which we made our longitude 167° 43′. By a meridian altitude of the moon, the latitude was 69° 38′. We formed here a third deposite of provisions.

In the night, one of the dogs barking loudly, we all jumped up and ran out, but could see nothing. The drivers maintained that the animal must have scented a wandering party of Tschuktschi, and they could not sleep a wink the rest of the night, for fear of a surprise.

On the 1st of March the thermometer was at —25° throughout the day, and a light breeze from the N.E. cleared the air. At noon we found the latitude by observation 69° 43′, variation 18¼° east.

The coast, which runs here in a N.N.W. direction, is tolerably high, forming a sort of wall, rising five or more fathoms above the surface of the sea. At the foot of it was a deserted Tschuktschi hut, which could not have been long forsaken, as sledge traces were still visible. Our drivers were much alarmed, and I deemed it prudent to keep a watch at night.

At a distance of three and a half wersts from the spot where we had taken our observation at noon, we came to a considerable opening in the coast,

which we took at the time for a bay, but whcih we discovered in the following year to be a passage between the Continent and an island to which Schalaurow had given the name of Sabadej. In crossing this strait, about the middle of it we came on some Tschuktschi huts, built of drift larchwood. They were empty, and we could not judge of the direction in which their occupants had gone, as the snow had covered the tracks of their sledges. Though the shore of the mainland is flat, that of the island is steep, and twenty fathoms or more in height. By a meridian altitude of the moon, the latitude of our sleeping-place was 69° 49′, and its longitude, determined by distances of the moon from Aldebaran, 168° 04′.

Here we found fresh traces of the Tschuktschi, and from the summit of a neighbouring hill we saw an extensive *tundra* at some distance towards the N.E. During this day's journey we were presented with a striking spectacle. In the N.E. horizon there appeared an insulated dark-gray cloud, from which white beams streamed to the zenith, and across it to the opposite horizon, resembling the beams of the aurora, but whether luminous or not we could not tell, on account of the daylight. The phenomenon lasted about half an hour. One of our Cossacks, who had been before on the Polar Sea, maintained that the cloud was occasioned by vapour rising from a sudden fissure in the ice. On the same evening there was an aurora extending from N.E. to N.W.

Next morning the weather was clear, and the temperature —30°. Soon after we started, M. Kosmin thought he could see land in the distance. We immediately ascended a hill, and ascertained that the supposed land was nothing but hummocks of ice piled up beyond a large *polynjä*, or space of open water, which extended from east to west as far as the eye could reach. Our observed latitude at noon

was 69° 52′. About two wersts from hence the shore becomes very flat; and this point of junction of the high and the low coast is probably Lieutenant Laptew's Sand Cape, though there is no projecting point which can properly be called a cape; its longitude by our reckoning is 168°. Thence we proceeded sometimes over the ice of the sea and sometimes on the coast, which is so low that it is probably overflowed in summer: a range of sand-hills ran parallel at a short distance. Driftwood had become scarce, but we found some boards which had apparently been left by the Tschuktschi, whose traces were numerous. We halted at the end of thirty-five wersts, and made a fourth deposite of provisions. The last of the provision-sledges returned from this point, and our party now consisted only of M. Kosmin, myself, and three Cossack drivers, with three travelling-sledges. By a meridian altitude of the moon, the latitude was 69° 58′; and the longitude, by reckoning and angles, 168° 41.

We saw this evening an aurora of extraordinary beauty. The sky was clear and cloudless, and the stars sparkled in their fullest Arctic brilliancy. With a light breeze from the N.E. there rose in the E.N.E. a great column of light, from which rays extended over the sky in the direction of the wind, in broad luminous bands, which, as they seemed to approach us, constantly changed their form. From the rapidity with which the rays shot through the whole space from the horizon to the zenith, in less than two seconds, the aurora appeared to be nearer to us than the clouds at their ordinary height. We could perceive no effect on the compass-needle.

Our Cossacks had repeatedly urged the necessity of allowing the dogs a longer rest, and we halted for that purpose on the 3d of March, though we ourselves meanwhile suffered a good deal from cold, being on an unsheltered flat, with a temperature of from —25° to —33°, and a cutting wind from the N.E.:

we were also most of the time without fire, as we had barely fuel enough to cook with. Nor were we without some degree of anxiety and uncertainty as to our future proceedings. We were ignorant of the true position of Cape Schelagskoj, of which we were in search; and the low state of our provisions would not admit of our taking the more certain but much less direct course by the coast, which here trended towards the south. While I was doubtful on what to decide, we saw at sunset two considerable hills in the eastern horizon, towards which we determined to direct our course.

Next morning the sky was obscured, and the temperature —2°, with a gentle breeze from the S.E. Our drivers envied the good fortune of the Tschuktschi in enjoying so mild a climate. We kept a direct course across the ice until we had gone sixty-one wersts, when the weariness of our dogs and the approach of night obliged us to halt among some ice-hummocks. We ascended one of these, and discovered from its summit that the land to the east formed a promontory, connected with a range of hills running in a southern direction. As we gazed we thought we saw the rocks and precipices of the promontory reflected on a smooth surface of open water; but in a few moments, what had appeared to be open water seemed changed to a smooth surface of ice, which presently became covered with numerous inequalities, varying their form every instant. At last, as the position of the sun was a little altered, the whole disappeared, and we saw clearly an almost impassable range of enormous hummocks extending in every direction. The strong refraction renders these optical illusions and transformations extremely frequent on the Polar Sea, and the traveller is often misled by them. We had exhausted our fuel, and were obliged to burn three of our tent-poles and a pair of spare sledge-runners to boil our soup: the rest of the time we had no

fire; but, fortunately, the wind continued from the S.E., and the temperature was not below —8°.

On the 5th of March, thirty wersts of laborious travelling among hummocks of ice brought us to the N.W. point of the Schelagskoj Noss. The doubling this cape was a work of difficulty and danger. We had often to ascend steep icebergs ninety feet high, and then to descend at great hazard to the sledges, the dogs, and ourselves. At other times we were obliged to wade up to our waists through loose drifted snow, and if we came occasionally to smooth ice, it was covered with sharp crystallized salt, which destroyed the ice-runners, and made the draught so heavy that we were obliged to harness ourselves to the sledges, and it required our utmost efforts to drag them along. The cape was sometimes totally concealed from view by intervening masses of ice; but wherever we approached the shore, it appeared to consist of a black, dense, glistening rock, in regular vertical columns of 250 feet or more in height, with occasionally intervening dikes some fathoms in breadth, of a whitish, fine-grained granite. Having accomplished about nine wersts in five hours with the greatest difficulty, both men and dogs were so completely exhausted that we were obliged to halt for the night in a little bay with a sandy beach, where, to our great joy, we found driftwood, and had the comfort of an excellent fire, by which our strength was so much recruited that we did not feel the cold next day (March 6th), when the temperature was —11°, with wind and driving snow. The mountains which form the promontory appeared to be above 3000 feet in height. In the bay where we slept we saw remains of fires and whalebones.

As we had now only three days' provisions remaining, it appeared very doubtful whether we could safely venture farther. I decided, however, on going sufficiently far to judge of the general trending

of this part of the coast, which was supposed, according to Burney's well-known views, to form an isthmus connecting Asia with America. I proceeded, therefore, with the best of the dogs and two unloaded sledges, leaving the third under the charge of one of the Cossacks. Luckily we found a narrow strip of smooth ice, which enabled us to get on rapidly. The direction of the coast, apart from unimportant indentations, trends S. 80° E. It consists chiefly of projecting points formed of the black slate-rock above-mentioned, with occasional intervening sandy beaches. The observed latitude at noon was 70° 3′ seventeen wersts from our sleeping-place. About twelve wersts farther on the rocks are replaced by a sandy shore, and the hills retire inland. We saw at a distance of twenty-four miles S. 48° E. (true), a promontory, which I named Cape Kosmin, after my zealous fellow-traveller. To judge by the immense blocks of ice close to the shore, the depth of water must be very considerable, and the absence of bays must render navigation dangerous, as vessels would be exposed to the pressure of the ice, without any place of refuge.

The want of provisions now obliged us to return; and I was forced to content myself for the present with having ascertained that for forty miles to the east of Cape Schelagskoj the coast trended in a S.E. direction. We marked the termination of our journey by the erection of a pyramid of large stones on a remarkable hill not far from a stream, which I named Poworotnoj (The Return). This pyramid is in 70° 1′ latitude, and 171° 47′ longitude, and is 418 wersts from our starting-point at Sucharnoje.

Late at night we reached our tent on the east side of Cape Schelagskoj, where we found the Cossack engaged in erecting a large wooden cross as a memorial. We assisted him to place it in a conspicuous situation, and engraved on it the date of our visit. On the morning of the 7th of March we began

our homeward journey with a temperature of —31°, a piercing wind, and driving snow. To avoid the hummocks we took our way inland over some low hills, and, to our great joy, after we had gone five wersts we saw the smooth sea-ice. This is probably the Wolok or portage over which Staduchin passed in 1700, when, in proceeding by water from the Kolyma, he found himself unable to get round the cape which he called the Great Tschuktschi Cape, and which subsequently received the name of Cape Schelagskoj. We followed the coast in a southerly direction, and pitched our tent for the night in a bay 25 wersts from the Wolok. Here we found a quantity of drift larchwood. We had a light breeze from the west, a temperature of —35° in the morning and 29° in the evening. The latitude, by observation at noon, was 69° 45′, and the variation 18° E. by the midday shadow. We saw a cape 4½ wersts off, in a S.S.W. ¼ W. direction, to which I gave the name of Cape Matiuschkin. It is in 69° 44′ latitude, and 170° 47′ longitude. A flat island here lying between W.N.W. and S.W., and only separated from the main by a narrow arm of the sea, is called by the Tschuktschi Arautan. Turning round the southern point of this island, we took our course to the westward, across Tschaun Bay; and, after travelling 25 wersts, we came to the low island of Sabadej.

On the 9th of March we arrived late in the evening at the place where we had made our fourth deposite of provisions. Happily we found it undisturbed, for we had consumed the day before the remains of those which we had taken with us. Subsequently, however, we were less fortunate. At the three other deposites, in spite of the precautions we had taken, we found nothing but fishbones, and numerous traces of stone-foxes and wolverines. Notwithstanding the utmost frugality, both ourselves and the dogs had to go the last two days without food. I encouraged my companions by the assu-

rance that we should find provisions at Stcharnoje, and also dogs and sledges, according to the orders which I had left; but in this we were disappointed: we found no one there, and had to continue our route to Nishne Kolymsk, where we arrived on the 14th of March, having been absent 22 days, and travelled 1122 wersts. Dr. Kyber had arrived from Irkuzk on the 20th of February, but his health had suffered so much from his winter journey that he was unable to accompany us on our next expedition over the ice.

M. Matiuschkin returned on the 19th of March, having executed his mission with complete success. The Tschuktschi chiefs were highly gratified with the presents sent to them, and gave him the strongest assurances of a friendly reception at their various settlements. None of them had ever seen or heard anything of a land to the north of their own coasts.

CHAPTER VI.

M. Matiuschkin's Account of the Fair at Ostrownoje.—Remarks on the Tschuktschi whom he met there, and on the Schamans.

We left Nishne Kolymsk on the 4th of March, our party consisting of Captain Cochrane and myself, a Cossack, and a Jakut, who understood the Tschuktschi language, and served as interpreter. After reaching the lesser Aniuj, we followed its course, passing many huts scattered along its banks, the inhabitants of which had already left them to proceed to the fair; and the well-beaten tracks made by the great number of passengers in that direction rendered our journey both rapid and easy. We ar-

rived on the 8th at what is called the Fort of Ostrownoje: a few huts surrounded by a palisade. It is situated on an island in the lesser Aniuj, in 196° 10′ longitude, and 68° latitude.

A great number of persons had already assembled, and the scene was in a high degree animated and curious, especially at night, when, illuminated by the blazing fires of the various bivouacs and tents, it contrasted with the calm brilliancy of the starry canopy above, and the pale-green, reddish, or straw-coloured light of the incessantly-varying aurora, which was visible almost every night. The Russian merchants arrived the next day with 125 loaded pack-horses. The Tschuktschi were here before us, and had encamped on the islands and banks of the river. They came from the extreme eastern point of Asia, bringing furs and walrus teeth, which they had crossed Behring's Straits to procure from the inhabitants of the Northwest coast of America. They had with them their women and children, their arms, their household goods, and their movable houses of reindeer skin, all conveyed on sledges drawn by reindeer. The journey occupies five or six months; for though the distance in a straight line is but little more than a thousand wersts, they make long, circuitous routes in search of pasture. They also visit two other places,* where a market of inferior importance is held: after remaining eight or ten days at Ostrownoje, they set off on their return, so that their life is actually passed on the road, allowing barely the time for necessary preparations and for their visits to the American coast. These are made in *baidars*, or boats formed of skins. The frequent storms and fogs render the passage dangerous in such frail vessels, and they usually stop on

* Anadyrsk and Kammenoje, at both which places the great fair used to be held: its removal to Ostrownoje, which took place forty years ago, is a great convenience and advantage to the Russians.

the way at the Gwosdew Islands. The trade is an exceedingly profitable one, both to the Russians and to the Tschuktschi. The latter are, indeed, little more than carriers, bartering the Russian tobacco, hardware, and beads for furs and other articles. Furs which they obtain from the Americans for half a pood of tobacco, they will dispose of to the Russians for two pood of the same article, making their profit in the transaction 300 per cent. The same two pood of tobacco may cost the Russian trader 160 roubles at the outside, and he sells the furs obtained with it for at least 260 roubles, leaving him a profit of 62 per cent. These furs consist chiefly of black and silver-gray fox, stone-fox, lynx, wolverine, river-otter, beaver, and a species of marten unknown in Siberia, of remarkable beauty, and nearly resembling the sable in the nature and colour of the fur. Besides these, the Tschuktschi bring from America bearskins, thongs of walrus skin, and walrus teeth. They add nothing of their own except whalebone sledge-runners, a large quantity of clothing made by them from the skins of their reindeer, and bags of sealskin in which they pack the American furs.

The wares brought by the Russians are nearly all selected with reference to the taste and wants of the Tschuktschi. With the exception of a little tea, sugar, and cloth for the settlers of their own nation who may visit the fair, they consist of tobacco and different kinds of hardware, such as kettles, hatchets, knives, &c., and beads of various colours. The traders *would* bring brandy in large quantities if they were not restrained by a wise and beneficent regulation of the government, though some of it is, notwithstanding, clandestinely introduced, and bought by the Tschuktschi at almost incredible prices: they call it *wild-making-water;* and some will give the most beautiful foxskins, valued at 250 roubles, for a couple of bottles of bad brandy, which cost only a few roubles at Jakuzk. The fair is also visited by

the different native tribes of a district above 1000 wersts in extent, Jukahiri, Lamuti, Tungusi, Tschuwanzi, and Koraki. The variety in their dress and equipments adds greatly to the animation and interest of the scene.

Before the fair began, the principal persons on both sides assembled to fix the prices for the different wares. After much discussion, it was settled that two pood of Circassian tobacco should be rated at sixteen fox and twenty marten skins, and other articles in proportion: any one known to sell below the established prices is made to pay a fine, and loses the right of trafficking during the remainder of the fair. Without some such regulation, the avidity of the Russian traders would lead them to spoil their market by too eager a competition.

On the 11th of February the fair was opened by hoisting a flag over the gate of the *ostrog*. At this signal the Tschuktschi advanced in order, fully armed with spears, bows, and arrows, and ranged themselves, with their sledges and goods, in a semicircle in front of the fort, where the Russians, with the other tribes, awaited the ringing of a bell, to give notice that the traffic might begin. The moment it sounded, it seemed as if an electric shock had run through the whole of the party in the fort. Old and young, men and women, all rushed forward in mad confusion towards the Tschuktschi; every one endeavouring to be first at the sledges to obtain the best, and to dispose of his own wares to the greatest advantage. The Russians were much the most eager of the whole: they might be seen dragging with one hand a heavy bag of tobacco, and carrying in the other a couple of kettles, while hatchets, knives, wooden and metal pipes, long strings of beads, &c., &c., were stuck round their girdles or hanging over their shoulders, as they ran from sledge to sledge, proclaiming their wares in a language which is a medley of Russian, Tschuktschi, and Jakuti.

The noise, press, and confusion defy all description. Many were thrown down by the throng in the deep snow, and run over by their competitors; and though some of them lost their cap and gloves in the fall, instead of stopping to recover them, they might be seen with bare heads and hands in a temperature of —35°, intent only on making up for lost time by redoubled activity. The excessive eagerness of the Russians was exhibited in remarkable contrast with the composure and self-possession of the Tschuktschi, who stood quietly by their sledges, and made no reply to the torrent of words poured forth by their customers until a proposal met their approbation, when the exchange was effected at once. It appeared to us that their calmness gave them a great advantage over the Russians. They had no scales, but judged the weight very accurately by the hand. The average value of the goods brought to this fair is said to be nearly 200,000 roubles: it lasts about three days, and at its close the various parties disperse.

I availed myself of the first assembly in the *ostrog* to converse with the principal chiefs in relation to our intended journey to their country and its objects. The persons of most note in this conference were Makamok and Leutt, from the Bay of St. Lawrence; Waletka, whose countless herds of reindeer feed to the east of Cape Schelagskoj, and Ewraschka, whose tribe lead a nomadic life near Tschaun Bay. I told them that the emperor had sent us to examine the coasts of the Icy Sea for the purpose of discovering whether and by what route vessels could reach the shores, and bring them such articles as they required in greater abundance and at a cheaper rate than they could obtain them at present; and I asked if, in the course of these researches, we should meet with their people, whether we might reckon on a friendly reception, and on obtaining any assistance which we might want, and

which would be amply rewarded. Of this I received from all the chiefs the fullest and most satisfactory assurances.

Captain Cochrane, however, was less successful. He represented himself as a merchant who wished to travel through their country to the Bay of St. Lawrence, and to cross over from thence to America; and offered to give them a suitable remuneration of tobacco and brandy for a safe passage.

Leutt demanded no less than thirty pood of tobacco to convey him by the month of June to Metschigmenskisch Bay. Waletka, on the other hand, offered to take him without recompense to the River Werkon, where he would recommend him to another chief, who would either forward him to Behring's Straits, or, if he preferred, bring him back to Ostrownoje the next year. If Leutt's demand was exorbitant, the disinterestedness of Waletka's proposal appeared somewhat suspicious. Captain Cochrane saw, moreover, that they were a people among whom he would have much to suffer, and from whom he could learn but little, as he was entirely ignorant of their language. He also judged, from their rude and passionate character, that he would run some risk of being deserted by them, or even of being put to death; and, on the whole, he determined to return to Nishne Kolymsk.

The Tschuktschi are in many respects a very peculiar race, and are but little known. They have rarely been visited by persons of observation, and even these have contented themselves with describing their personal appearance, and a few striking ceremonies. A long residence, and a knowledge of the language, would be requisite to obtain correct views as to their modes of life and general character. I cannot pretend to supply this deficiency, but I may furnish towards it the little I could learn on the present and on other occasions, either directly from themselves, from my own observation, or from

the accounts given by the Russian settlers who are their neighbours. They have retained their original national peculiarities far beyond any other race in Northern Asia. Their weakness has taught them to cultivate peace, and their severe encounters with the conquerors of Siberia have greatly narrowed the limits of the territory within which they wander free and independent. As with all uncivilized people, their wants are few: their reindeer supply them with food, clothing, and shelter; and they regard with contempt the other aborigines who are content to live under Russian domination. Before the conquest of Siberia they were constantly at war with their neighbours; nevertheless, they made common cause against the invaders; but the strife was too unequal, and, although they had been always accustomed to victory in conflicts with the weaker tribes, they were then fain to retire into deserts difficult of access, and offering little to tempt farther intrusion. It was long, however, before any peaceful commercial intercourse took place; and when it did, it was at first only on the confines of their own territory, where they came in strong force and completely armed. They have gradually acquired more confidence in the friendly intentions of the Russians, and they now come with their wives and children some distance within the boundaries of the latter. This intercourse, by making them acquainted with milder manners, has in some degree softened their fierce character; and, no doubt, in process of time, they will assimilate more and more to the Russians, until at length they unite with them, as their neighbours have done. A great number of the Tschuktschi have been already baptized, but it must be admitted that they are as much heathens as ever, and have not the slightest idea either of the doctrines, or of the spirit of Christianity. A priest from Nishne Kolymsk attends the fair, and is ready to baptize any who offer themselves, which numbers are induced to do, solely

to obtain the presents which it is customary to make them on the occasion.* No instruction is given them, and it is scarcely possible that any should be, so long as their present wandering mode of life continues; nor is their language, which is not understood by the priests, a less formidable obstacle. The St. Petersburgh Bible Society attempted the translation of the Ten Commandments, the Lord's Prayer, the Creed, and, if I mistake not, one of the Gospels, into a Tschuktschi dialect, printed in Russian characters; but partly from the language being totally deficient in words to express new and abstract ideas, and partly for want of letters to represent the strange and uncouth sounds that are found in it, I was assured by those capable of forming an opinion on the subject, that the version was wholly unintelligible.

Polygamy is general among them, and they change their wives as often as they please. Still, though the women are certainly slaves, they have more influence, and are subjected to less labour, than with many other savage nations. Among other heathenish and detestable customs is the inhuman one of destroying all deformed children, and even those who appear too delicate easily to rear, and all their old people, as soon as they become unfit for the fatigues and hardships of a nomade life. Two years ago there was an instance of this in the case of one of their wealthiest and most respected chiefs. Waletka's father became infirm and tired of life, and was put to death at his own express desire by some of his nearest relations.

Every tribe and every caravan is accompanied by one or more *schamans*, who are consulted on all important occasions, and their decisions are rarely controverted. The extent of their power was

* This is a profanation of that hallowed rite which cannot be too severely reprobated. What claims to Christianity can its professed ministers have, who thus prostitute their sacred office, and recklessly violate all its obligations?—*Am. Ed.*

shown, among other instances, by a terrible exhibition of it at Ostrownoje fair in 1814. A sudden and violent disease broke out, and it carried off not only many of the Tschuktschi themselves, but also a great number of reindeer, which form their chief wealth. After having in vain had recourse to their usual conjurations, drummings, and jumpings, the *schamans* held a general consultation among themselves, in which it was determined that one of the most honoured chiefs, whose name was Kotschen, must be sacrificed to appease the incensed spirits.

Kotschen, however, was so highly respected by the whole nation, that, notwithstanding the implicit obedience usually rendered to the commands of the *schamans*, their decision on this occasion was rejected. But, as the sickness continued to rage, and as neither presents, menaces, nor severe treatment* were of any avail in inducing the *schamans* to change their resolution, Kotschen himself, like another Curtius, declared his willingness to submit. Still, so great was the love borne to him by all, that no one could be found who was willing to execute the sentence, until at last his own son, prevailed on by his father's entreaties, and terrified by his threatened curse, plunged a knife into his heart, and gave the body to the *schamans*.

It is remarkable that *Schamanism* has no settled dogmas of any kind; it is not a system of belief taught or handed down from one to another, but, though so widely diffused, seems to originate with each individual separately, as the fruit of a highly-excited imagination, acted upon by external impressions, which, in their character, closely resemble each other throughout the deserts of Northern Si-

* It is not unusual to chastise a *schaman* severely, in order to induce him to withdraw or alter a sentence which he may have pronounced, and the attempt sometimes succeeds; but if he has fortitude to hold out, his reputation is sure to be enhanced thereby.

beria. The *schamans* have been represented as being universally mere knavish deceivers; and no doubt this is true of many of them, who go about the country exhibiting all kinds of juggling tricks to obtain presents; but the history of not a few is, I believe, very different. Certain individuals are born with ardent imaginations and excitable nerves. They grow up amid a general belief in ghosts, *schamans*, and mysterious powers exercised by the latter. The credulous youth is strongly affected, and aspires to participate in these supernatural communications and powers; but no one can teach him how he shall do so. He retires, therefore, from his fellows; his imagination is powerfully wrought upon by solitude; by the contemplation of the gloomy aspect of surrounding nature; by long vigils and fasts, and by the use of narcotics and stimulants, until he becomes persuaded that he too has seen the mysterious apparitions of which he has heard from his boyhood. He is then received as a *schaman*, with many ceremonies, performed in the silence and darkness of the night, is given the magic drum, &c. Still, all his actions continue, as before, to be the result of his individual character. A true *schaman*, therefore, is not a cool and ordinary deceiver, but rather a psychological phenomenon, by no means unworthy of attention. Always after seeing them operate, they have left on my mind a long-continued and gloomy impression. The wild look, the bloodshot eyes, the labouring breast, the convulsive utterance, the seemingly involuntary distortion of the face and whole body, the streaming hair, the hollow sound of the drum, all conspired to produce the effect; and I can well conceive that these should appear to the superstitious and ignorant savage as the work of evil spirits.

Leaving this subject, I proceed to give some account of the Tschuktschi camp. The tent of a chief may be distinguished among every ten or twenty by

its greater size and height. It was usually pitched near a tree, on the branches of which hung bows, arrows, quivers, clothing, skins, and household articles; and a few choice reindeer were tethered near it, and fed with fine moss. Fires were burning in the open air as well as in the tents; and men and women, clothed in furs and covered with hoar-frost, were moving about as gayly as if it were summer, in a cold of —41°.

The tents, called *namet*, have an opening in the centre for the smoke to escape, and within them are one or more *pologs* or small sheds. The polog is a sort of square box, formed of skins stretched over laths, and so low that persons inside can only sit on the ground, or, at the most, move a little on their knees. It has no opening for admitting air or light, and is entered by creeping through the smallest possible aperture, which is then carefully closed. An earthen vase filled with train oil, and furnished with a wick of moss, gives light and warmth, and the heat of this place is so great, that the occupants wear scarcely any clothing during the most intense cold. There are often two or three of these *pologs* under one *namet*, each containing one of the wives of the master of the tent, with her children.

Leutt invited me to pay him a visit, and I rejoiced at an opportunity of seeing something of their domestic arrangements; but, as soon as I had succeeded in creeping into the *polog*, I was wellnigh suffocated by the fumes from the stinking oil, and the evaporation from six almost naked people. My awkward entrance and disconcerted air excited the merriment of my host's wife and daughter, who were engaged in decking their hair with beads in honour of my visit. They placed before me some reindeer meat in a dirty wooden vessel, adding a little rancid oil to improve the flavour: I was obliged to get down a morsel or two of it, while my host expatiated on the excellence of his wife's cookery in

broken Russian, swallowing at the same time a quantity of meat and broth, without salt, to which this people have a great aversion. I shortened my stay as much as possible, but my clothes retained for many days the smell of the *polog*. It is wonderful how they can endure such a pestiferous atmosphere, and still it does not seem to injure their health, for they are a remarkably strong and vigorous race. They are distinguished from the other Asiatic tribes by their stature and by their physiognomy, which appears to me to resemble that of the Americans, though their language is different. They call themselves *Tschekto*, people.

Another Tschuktschi chief, named Makomol, invited me to see a race on the ice near his camp, and came for me in his sledge. We found a number of persons assembled to witness the contest, and lining both sides of the course. The three prizes consisted of a blue foxskin, a beaver skin, and two particularly fine walrus teeth. At a given signal the competitors started, and we could not but admire the surprising fleetness of the reindeer, as well as the skill of the drivers. The victors were loudly applauded by the whole assembly, but especially by their countrymen, whose suffrages they appeared principally to value.

The sledge-race was followed by a foot-race, which I thought still more curious in its way. The runners were clad in the usual heavy, cumbrous fur dress, in which we moved with difficulty, yet they bounded as lightly and swiftly over the snow as our best runners in their light jackets and thin shoes. I was particularly struck by the length of the race, which could have been scarcely less than fifteen wersts. The victors received prizes of inferior value, and some slight applause; the Tschuktschi appearing to attach a much higher honour to success in the sledge-race. After the games were ended the whole party were entertained with boiled reindeer

meat, cut up in small pieces, and served in large wooden bowls placed on the snow. Every one came to receive his portion, and the order and quietness which prevailed were quite remarkable: neither during the races nor at the meal which followed did I see any crowding, pushing, or quarrelling. Indeed, the general good behaviour was such as is not always met with in more civilized countries on similar occasions.

The next day a large party of Tschuktschi, both men and women, came to visit and take leave of me. I had nothing to set before the ladies except tea and sugar-candy: they were pleased with the sugar, but would not touch the tea. After this scanty entertainment I distributed among them blue, red, and white beads, and the good-humour of the party was such that the females offered to show me one of their dances. They stood up in a circle, moving their feet and body backward and forward without changing their place, and beating the air with their hands. After this three distinguished performers commenced a favourite national dance, which was much admired by the spectators generally; but we strangers could see only three misshapen oily figures, who made a number of frightful grimaces, and jumped to and fro until exhaustion obliged them to desist. The interpreter recommended that a small cup of brandy and a little tobacco should be given to each of the three dancers. This was done; and the whole party soon after dispersed, with repeated invitations to visit them in their own country. The sixth day after our arrival the fair terminated. The chiefs paid me one more formal visit, for the purpose of renewing their assurances of a friendly reception, and then took their departure in five or six different caravans: the rest of the assemblage separated in various directions at the same time; and the next fall of snow obliterated all traces of the busy scene, the loneliness of which was only disturb-

ed by the foxes and wolverines, who resorted there to look for bones and other remnants of food that might have been left.

I quitted Ostrownoje on the 16th of March; and as the dogs had been refreshed by good food and rest, and the snow was well beaten by the number of travellers, our journey was a rapid one: we reached Nishne Kolymsk in three days.

CHAPTER VII.

Second Ice Journey.—Preparations.—Plan.—Departure.—Bear-Hunt.—First Encampment on the Ice of the Polar Sea.—Four Pillar Island.—Ice broken up and covered with Sea-Water.—Hummocks.—Deposite of Provisions.—State of the Ice.—Easter.—White Bears.—The Bear Islands.—Return to Nishne Kolymsk.

The preparations for our second journey over the ice resembled in most particulars those already described, being only much more extensive, as our journey was intended to be much longer, and our party more numerous. Some additional articles, however, appeared to be requisite on the present occasion, as our nightly halts would be made on the ice at a distance from land, and we might expect frequently to encounter hummocks of ice similar to those we had met with at Schelagskoj Noss. The advanced season rendered it also probable that we might sometimes find the snow imperfectly frozen. On these accounts we took with us crowbars for breaking the ice, a portable boat made of skins for crossing lanes of open water, and a quantity of whalebone to bind under the runners of our sledges whenever we came to places either covered with soft snow, or with crystals of salt left by the over-

flowing of the sea-water. I added to the instruments a dipping-needle and a sounding-line. We took no more than thirty days' provisions for ourselves and our dogs (of which we had 240), trusting that our stock might occasionally be replenished by success in bear-hunting.

Especial care was bestowed on the selection and preparation of the travelling-sledges that were to serve us throughout the expedition: the six best and longest ones, and the strongest and best dogs, were set apart for this purpose; while the stores and provisions were to be conveyed in fourteen other sledges, which were to be sent back to Nishne Kolymsk as they should be emptied. The dogs belonging to the travelling-sledges were sent forward to Sucharnoje, where they arrived on the 16th of March, and were prepared for the journey by good feeding and rest. M. Matiuschkin followed on the 22d, to superintend the distribution and packing of the stores, and I myself reached there on the 25th, when I found everything in perfect order for our departure. The sledges were all packed, the lading of each weighing about 30 pood; the runners had been covered with a thick coat of smooth ice, and the dogs were in excellent condition. My companions were M. Matiuschkin, the retired Sergeant Reschetnikow, and the sailor Nechoroschkow. We were joined, likewise, by a merchant of Kolymsk named Bereshnòi, who had requested to be allowed to accompany us on his own account, and in two of his own sledges. The drivers I had selected for the travelling-sledges were three Cossacks, a Russian peasant, and two Jukahirs. The provision-sledges were driven partly by Cossacks and partly by residents of Kolymsk and Jukahirs.

We started on the 26th of March, with a light S.E. breeze, a cloudy sky, and a temperature of +21°, and slept at the lesser Baranow Rock, at the same *powarna* where we had halted in our first jour-

ney. We found here a quantity of driftwood, and loaded our sledges with as much as they could carry, forming a stock of fuel which, with due frugality, would last twenty-five days.

My instructions directed me to begin our researches at Cape Schelagskoj: but, after our recent journey to that cape, I judged it more advisable, for several reasons, to proceed directly to the north, and start from the Baranow Rocks. First, our deposites of provisions, on which the success of the expedition mainly depended, might not have been safe in the neighbourhood of the Tschuktschi; secondly, the immense hummocks which I had seen on that part of the coast would have presented a formidable obstacle to our progress; and, thirdly, so large a portion of the short remaining season would have been consumed in reaching the cape, and our dogs would have been so wearied that we should probably have accomplished very little towards the true object of our journey.

On the 27th, at 11 A.M., as soon as the mist had cleared away, we took our departure in a due northerly direction. The twenty-two sledges of which our caravan consisted formed a line of more than half a werst in length, so that the foremost and hindmost of the party often lost sight of each other. When we had gone two wersts from the coast, we found ourselves in the midst of a chain of hummocks, about seven wersts in breadth, running parallel with the shore; they were high and rugged, and the hollows among them were filled with loose snow, so that the passage was difficult; and about the middle of the group we came to a wide fissure in the ice. After three hours labour we found ourselves outside of the chain, nine wersts from the shore, on an extensive plain of ice, broken only by a few scattered masses, resembling rocks in the ocean. The hope of being able to pursue our way uninterruptedly made us regard the view, at first, with some-

thing of the pleasure which sailors feel at the sight of the open sea, after passing through intricate channels among dangerous rocks. The dogs quickened their pace of their own accord, as if sharing our feelings; and after we had gone eleven wersts farther, I halted to give them rest, and to wait for the provision-sledges. They had just lain down in the snow, when an enormous white bear made his appearance from behind a hummock, looking as if he meant to attack us; but the loud barking and howling of the dogs soon made him take to flight. The whole party followed in quick pursuit, with guns, spears, and bows and arrows. The chase lasted three hours. The bear, after receiving three arrows and two balls in his body, seemed enraged rather than subdued by his wounds, and turned furiously on the foremost of his pursuers. At that instant another ball struck him in the breast, and turned his rage on a new assailant: the Cossack who had fired the shot dexterously received the enraged brute on his lance, directing its point into his mouth, and with admirable skill and force succeeded in overthrowing him, when the other hunters hastened to aid their companion, and the beast was soon despatched. He measured above nine feet from snout to tail, was very fat, and so heavy that twelve good dogs could scarcely drag him. We judged that he must have weighed above thirty-five pood.

While this was going on some of the provision-sledges came up, the drivers of which told us that two of their companions had been overset in a deep cleft among the hummocks, and could not be extricated without additional help. I immediately had three sledges emptied and sent to their aid; and, to our great joy, the poor men rejoined us two hours afterward, quite uninjured, though very cold and wet.

The day was now so far spent, and both men and dogs were so wearied by their exertions, that we de-

termined to stay where we were for the night. The tent before described formed the centre of the little camp, and four smaller ones, or *pologi*, belonging to the merchant Bereshnoi and to the wealthiest of our drivers, were pitched near it; while the sledges were drawn up so as to form an outer circle, within which the dogs were tethered. This arrangement afforded entire security against any sudden attack by bears, for they could not approach the encampment without being discovered at some distance by the keen scent of the dogs. The weather was beautiful, and we availed ourselves of the bright evening twilight to warm ourselves before lying down to rest, by throwing spears at a mark. A piece of ice was made to represent a bear, certain spots on it were marked as the eyes, the nose, and the heart, and whoever hit one of these was declared entitled to join in the next bear-hunt. During these exercises some of the party were engaged in repairing the damages the sledges had sustained among the hummocks; others in skinning and cutting up the bear,* in preparing supper, &c. In the latter the utmost frugality was observed in respect to wood; the care of the fuel was intrusted to one of the Cossacks, whose duty it was to see that the least possible quantity was employed in boiling the tea and soup, to extinguish the fire the moment the cooking was over, and to preserve the smallest fragment of the embers for the next day's use; nor were we less careful in regard to provisions.

On the following day (March 28th) one of our provision-sledges being emptied, was sent back; the temperature was + 5° in the morning, and + 10° in the evening. We proceeded in a N. 15° W. direction, and steered our course by some ice-hills that

* The dogs have a remarkable aversion to bears' flesh *as long as it is warm*, and will not then touch it even though pressed by hunger; but after it is cold they eat it with avidity.

were visible in the distance. We were favoured by a southeasterly wind, and by the smooth surface of the ice. At noon we halted for our daily observations, which gave the latitude 69° 58′; and the greater Baranow Rock bore S. 73½° E. by compass. We met with numerous traces of stone-foxes, which appeared to lead in the direction we were going: this had the good effect of making our dogs quicken their pace. After proceeding forty-eight wersts we formed our encampment for the night, in the manner before described. The observed latitude was 70° 12½′; the greater Baranow Rock lay in a S. 56° E. direction, at a distance of about thirty-nine Italian miles; and the dip of the magnetic needle was 78° 15′ N.

We already felt the ill effects of the reflection from the snow on our eyes: the weather had been cloudless, and every one complained more or less of inflammation and acute pain. Some black crape, therefore, which I had brought for the purpose, was now cut up to cover spectacles and form veils for the whole party, and this afforded some protection. The natives applied snuff to their eyes every evening, which increased the pain during the night, but made them better in the morning. We considered this remedy too violent, and contented ourselves with washing the part with spirits, which had the effect of lessening the pain and inflammation.

On the 29th of March we had a clouded sky and a mild S.E. breeze, with a temperature of + 14° in the morning, and —4° in the evening. We kept on in the same direction, and found our latitude at noon 70° 19′: after proceeding two wersts beyond this spot, we discovered, through the mist, land bearing N. 39° W., and directed our course towards it, in the hope of making a discovery.

Lyssjew, Puschkarew, and Leontjew, in 1769, laid down the position of the Bear Islands, placing the most easterly of them in 71° 58′; according to this,

the land before us could not belong to that group. Its form and size appeared constantly varying: sometimes it looked high and of considerable extent, sometimes it appeared low, and at other times it disappeared altogether, so that some of our party began to suspect that we had only been deceived by one of the optical illusions so common on the Polar Sea. But when we had approached within sixteen wersts of the object of our doubts and hopes, we clearly discovered that it really was an island, of no great size or elevation, having on it three pillar-like masses of rock of different heights. Two wersts distant from it we had to pass some hummocks: at length, however, we reached a promontory, and perceived behind it a bay, on the sloping shores of which we were not a little gratified at finding drift-wood. This, and the weariness of our dogs, who had come forty-six wersts, induced us to halt at once for the night: the last provision-sledges did not come up until two hours later.

While our people were pitching the tents and preparing supper, we availed ourselves of the remains of daylight to climb the hill on which the three pillars are situated. From the shore to this point, which is the highest in the island, the ground is covered with fragments of granitic porphyry, gradually increasing in size, the highest pieces lying immediately around the pillars. The pillars themselves consist of horizontal layers of the same rock five inches in thickness. In two of them there are considerable cracks, running throughout the whole mass from below upward, and in a N. 60° E. direction, parallel with the outer sides or walls. Hence it may be concluded that these three masses of stone once formed part of a single large rock, and that their separation and present form have resulted from exposure to the weather or from other external causes. We measured them, and found the tallest 48.3 feet in height, and 91 feet in circumference near the

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ground. The form is something like the body of a man, with a sort of cap or turban on his head, but without arms or legs. At the eastern extremity of the island there is a fourth pillar-like rock of rather smaller size, so that we gave to it the name of Four Pillar Island. We found near our camp two old wooden sledge-runners and some reindeer sinews, showing that the place had been visited by others.

We returned by the west side of the bay, and reached the coast after a walk of five wersts. On approaching our little camp, we were greeted by the welcome sight of several blazing fires, round which our companions were pursuing their various occupations with more than usual cheerfulness, and we hastened to share their enjoyment. On the following day (March 30th) we had in the morning a temperature of 0, with a light S.E. breeze and a clouded sky: and in the evening + 7°. At noon we remarked a halo round the sun's disk.

I had determined to halt here for one day, as it would afford an opportunity of sending back two more empty provision-sledges, and of preparing a store of finely-broken driftwood. While M. Matiuschkin went round the island in a sledge for the purpose of surveying its coast, I was occupied in making various observations. By a meridian altitude of the sun I found the latitude of our encampment to be 70° 37′, and its longitude 0° 41′ E. from Sucharnoje, the variation 14° 6′ E. by corresponding azimuths, and the dip 79° 3′, by observations in which the poles of the needle were changed several times. In order also to deduce the dip, I made a series of experiments on the oscillation of the needle, but the results disagreed so much with each other that I lost all confidence in my inclinatorium for that particular purpose. The most successful experiment showed that, when the instrument was in the magnetic meridian, the needle made exactly 181 vibrations in five minutes by the chronometer,

and that, when the instrument was placed in a direction perpendicular to the magnetic meridian, the needle made only 177 vibrations in the same time, which would give a dip of but 75° 30′.

Towards evening M. Matiuschkin returned, having completed his survey, from which we drew a map. From the western shore two small islands were visible, but the thick mist prevented their distance being accurately judged of.

The position of this island, its form, its pillars of rock, and, finally, the two islets lying to the west and northwest, lead me to believe that it is the same as that described by Leontjew* as the most eastern of the Bear Islands. It is true that he places that island 1° 21′ farther to the north; but this difference, great as it is, proves nothing against the identity of the two, as a similar error runs through all his determinations of latitude along the coast of the continent west of the Kolyma.

We resumed our journey on the 31st of March, with a slightly clouded sky and a fresh breeze from the northeast. The thermometer stood at +7° in the morning, and rose in the evening to +14°, with a strong wind from the E.N.E. We took our departure from the eastern point of the island in a N. 5° E. direction by compass. At noon we had travelled about 11 wersts, and found our latitude 70° 42′, and our longitude 0° 48′ E. from Sucharnoje. Hitherto we had got on without much difficulty, except in passing the hummocks; but now we came on a surface of ice, which, though smooth, was covered with sharp grains of sea-salt, which soon destroyed the ice-coating of our sledge-runners. They no longer glided smoothly along, and we were obliged to relieve the dogs of our weight. The farther we advanced, the more difficult our progress became, the snow being

* Leontjew commenced his explorations in 1765, and continued them for five years. He made three different journeys over the ice.—*Am. Ed.*

more soft and damp, and the crust of salt thicker. The wind, also, which was from the E.N.E., freshened more and more, bringing with it a thick fog, so moist that our fur clothing was soon wet through. All these circumstances indicated the vicinity of open water, and our situation became every moment more hazardous, as the gale continued to increase, and the thick mist which covered the whole horizon did not permit us to see where we were going. To proceed farther, therefore, was out of the question, and to halt for the night where we were was almost equally so; the snow and ice being both so saturated with salt as to be quite undrinkable, while on this flat surface we had no point of refuge in the not improbable event of the ice being broken up by the storm. In this state of painful uncertainty, the mist lightened up in a N. 35° E. direction sufficiently to allow us to perceive some hummocks at the distance of about a werst. We hastened to them, and encamped under the shelter of a thick wall of ice five fathoms in height, to await a favourable change of weather. Here, too, the layer of snow, which was about a foot thick, was so mingled with salt, that I thought it probable the ice might not be sufficiently strong to afford us a secure foundation during the approaching storm; I had a hole, therefore, cut to examine its thickness, and was satisfied on finding that it exceeded three and a half feet. The upper surface of the snow on the top of the hummocks supplied us with pure and good water, while that in immediate contact with the ice had a very salt and unpleasant flavour. The storm continued to increase, and became extremely violent in the course of the night, so much so that our tent was torn by the wind, and would probably have been carried entirely away had it not been secured to a hummock by strong fastenings. At four in the morning the storm subsided, and we put ourselves in motion in a N. 10° E. direction: there was still a thin mist, and

the air was mild, the thermometer standing at +23°. In the evening the sky cleared, and the temperature sank to +7°. Our noon observation gave 70° 54′ latitude, and our longitude by reckoning was 1° 8′ E. from Sucharnoje. Having gone 24 wersts farther, we came upon tracks of stone-foxes leading in a northwest direction: the horizon in that quarter was veiled by a dark blue mist, which our companions told us usually indicates open water. Some of the hummocks that we saw contained earth and sand. We had bound pieces of whalebone under our wooden sledge-runners, and found that they greatly facilitated our progress over the damp snow and seasalt. Still we were obliged to walk, and it took us seven hours to accomplish thirty-three wersts, notwithstanding which our provision-sledges were so far behind that we had lost sight of them. We therefore halted, and passed a more quiet night than the preceding. The evening and morning twilight had now melted into one.

On the morning of the following day (April 2d) a northwest wind brought snow, the temperature being +18°. Our course was N. 10° W. We made our way with great difficulty among hummocks of ice, and had to use our utmost efforts to drag the sledges across wide strips covered with large crystals of salt. About 14 wersts from our sleeping-place we came in sight of three seals, which were unconcernedly sleeping on the ice: the dogs rushed towards them, but they made good their retreat and disappeared under the ice. On coming to the spot we found a round hole of a foot and a half in diameter. The ice here was rather more than a foot in thickness, very rotten, and full of salt. We sounded and found twelve fathoms, with a bottom of soft green mud. The line of hummocks through which we had passed ran due east and west, and there were others in the same direction about four wersts to the north of the seals' airhole. We passed

over a strip three or four wersts in breadth, where the snow was deeper and free from salt; and, having made thirty-four wersts in a northerly direction, we encamped for the night under the shelter of a large hummock. By our reckoning our latitude was 71° 31′, and our longitude 1° 37′ E. from Sucharnoje.

We were a good deal exhausted by the efforts which the state of the snow had rendered necessary, and by the unwonted mildness of the weather. We determined, therefore, to rest by day and to travel during the night, when the air was colder, and when we should suffer less from the dazzling effect of the snow, while at the same time we should enjoy uninterrupted twilight. On the 3d of April I sent back three more empty provision-sledges, giving the drivers a compass to aid them in their homeward course. Our noon observation gave the latitude 71° 32′. The weather was overcast, with a light breeze from the north, the thermometer at +16°, and damp snow fell at night.

We started shortly after sunset, and noticed a number of tracks of stone-foxes passing from W.S.W. to E.N.E. At first we got on pretty rapidly, notwithstanding occasional salt patches; but these gradually increased until we had gone about fifteen wersts, when we found ourselves in what may be called a deep salt moor, where it was impossible to proceed farther. I examined the ice beneath the brine, and found it only five inches thick, and so rotten that it might easily be cut through with a common knife. We hastened, therefore, to quit a place so fraught with danger, and, after going four wersts in a S. by E. direction, reached a smooth surface covered with a compact crust of snow. After advancing a couple of wersts over this, I had the ice examined, and found it fourteen inches thick. The depth of the sea was twelve fathoms, and the bottom greenish mud. We halted one or two wersts farther on, near some inconsiderable hummocks,

where the thickness of the ice and the depth of water were examined, and found the same as before.

Meanwhile the north wind increased in strength, and must have raised a considerable sea in the open water, as we heard the sound of the agitated element beneath, and felt the undulatory motion of the thin crust that covered it. Our position was at least an anxious one; the more so, as we could do nothing to avoid the impending danger. Few of our party slept any, the dogs alone being unconscious of the probability that the ice would be broken up under us by the force of the waves. Our latitude was 71° 37′, and our longitude 1° 45′ E. from Sucharnoje. In the morning we had a cloudy sky, damp snow, and a temperature of +16°, with a gale from the north; but in the evening the wind moderated and shifted to N.E.; the sky cleared, and the thermometer showed +9°.

As soon as the wind fell and the weather became clear, I had two of the best sledges emptied, and placing in them provisions for twenty-four hours, with the boat and oars, and some poles and boards, proceeded northward to examine the state of the ice, directing M. Matiuschkin, in case of danger, to retire with the whole party as far as might be needful, without waiting for my return.

After driving through the thick brine with much difficulty for seven wersts, we came to a number of large fissures, which we passed with some trouble by the aid of the boards we had brought with us. The ice was heaped up in several places in little mounds or hillocks, which at the slightest touch sunk into a kind of slough. This rotten ice was scarcely a foot thick: we found the sea twelve fathoms deep, and the bottom green mud. The countless fissures in every direction through which the water came up, mixed with a quantity of earth, the little hillocks above described, and the water standing among them, all gave to the ice-field the

appearance of a great morass, over which we contrived to advance two wersts farther to the north, crossing the narrow openings, and going around the larger ones. At last they became so numerous and so wide that it was hard to say whether the sea beneath was really still covered by a connected crust, or only by detached floating fragments of ice, having everywhere two or more feet of water between them. A strong gust of wind would have sufficed to drive these separate portions against each other, and, being already thoroughly saturated with water, they would have disappeared in a few minutes, leaving nothing but open sea on the spot where we were standing. It was manifestly useless, therefore, to attempt proceeding farther; and we hastened to rejoin our companions, to seek with them a place of greater safety. Our most northern latitude was 71° 43′; and we were at a distance of 215 wersts in a straight line from the lesser Baranow Rock.

During my absence M. Matiuschkin had observed the magnetic dip, and found it 79° 51′. I immediately gave orders to break up, and to take a S.S.E. course.

At this stage of my narrative I will notice the remarkable skill with which our sledge-drivers preserved the direction of their course, whether in winding among large hummocks, or on the open unvaried field of snow, where there were no objects to direct the eye. They appeared to be guided by a kind of unerring instinct. This was especially the case with my Cossack driver, Sotnik Tatarinow, who had had great experience in his occupation. In the midst of the intricate labyrinths of ice, turning sometimes to the right and sometimes to the left, now winding round a large hummock, now crossing over a smaller one, among such incessant changes of direction he seemed to have a plan of them all in his memory, and to make them so compensate each other that we never lost our main course, and,

while I was watching the different turns, compass in hand, trying to discover the true route, he appeared always to have a perfect knowledge of it practically. His estimation of the distances passed over, reduced to a straight line, generally agreed with my calculations, based on observed latitudes and the day's course. It was less difficult to preserve the true direction on a plain surface. To enable us to follow as straight a line as possible, we endeavoured to keep our eyes fixed on some remarkable piece of ice at a distance; and if there were none such, we were guided by the wavelike ridges of snow (*sastrugi*) which are formed, both on the land and on the level ice of the sea, by any wind of long continuance. These ridges always indicate the quarter from which the prevailing winds blow. The inhabitants of the *tundras* often travel to a settlement several hundred wersts off, with no other guide over these unvaried wastes than the *sastrugi*. They know by experience at what angle they must cross the greater and the lesser waves of snow in order to arrive at their destination, and they never fail. It often happens that the *true*, permanent *sastruga* has been covered by another produced by temporary winds; but the traveller is not to be deceived thereby; his practised eye detects the change, and, carefully removing the recently-drifted snow, he corrects his course by the lower *sastruga* and by the angle formed by the two. We availed ourselves of these ridges on the level ice of the sea, for the compass cannot well be used while driving: it is necessary to halt in order to consult it, and this loses time. Where there were no *sastrugi*, we had recourse to the sun or stars when the weather was clear, but we always consulted the compass at least once every hour.

After we had gone 20 wersts, the hummocks increased both in size and number: at first the ice was merely uneven; but we soon met with detach-

ed pieces of various sizes, gradually increasing until they formed complete ranges of hummocks, often 80 feet high. These great masses of ice were all of a greenish-blue colour, and had a strong salt taste. The difficulty of working our way among them was much augmented by the loose snow which lay between, concealing a quantity of sharp fragments which often overturned our sledges, and gave us many a painful bruise. These hummocks, which differed from those we had before seen, were what are called winter hummocks. They had been formed during the last winter, as well as in the preceding spring and autumn, when the ice, broken by violent storms, is heaped up and cemented together by the intense cold. On getting clear of these sharp-pointed winter hummocks, we came upon another group of a totally different aspect. It consisted partly of conical elevations, varying in height* and size, and sometimes having long or round valleys between them. As we saw no detached masses, we at first thought ourselves on a hilly island, but on examination it proved to be nothing but snow and ice in a somewhat different form. In the hollows and on the summits of the elevations we found the surface of the ice perfectly bare. It was smooth and even, its colour varying from whitish gray to black: it had a perfectly fresh taste, and was large-grained and opaque. The sides of the hills were covered with snow, and afforded excellent travelling. After proceeding two wersts we found ourselves in a small circular hollow, completely sheltered from every wind, and here we formed our encampment.

On the 5th of April the sky was clear, with a strong breeze from S.S.E., the temperature at + 9° in the morning, and + 7° in the evening. Our noon observation gave the latitude 70° 30′, and the longi-

* We measured the height of some of the largest, and found it ninety feet.

tude was 1° 55′ E. from Sucharnoje. After sunset we resumed our march in an easterly direction, but at the end of three wersts we found ourselves among almost impassable winter hummocks, which appeared to have been formed upon and around others, consisting of the solid ice above described. We saw at some distance a high black summit, so closely resembling a rock that I determined to reach it in spite of every difficulty. It cost us three hours to effect this, and we had to break our way with crowbars for about 300 fathoms. We found, however, that it was only an ice-hill, composed entirely of the solid ice already mentioned. From its summit we had an extensive view. To the north and east we saw impenetrable winter hummocks, and a number of lanes of open water: to the S.E. the surface was more even, and less intersected by fissures.

The provision-sledges had been so much injured that it was plain they could not hold together much longer, and the dogs belonging to them were exhausted by hard work. I determined, therefore, to form a deposite of provisions at this place, and to send back the empty sledges. We excavated in the iceberg a kind of cellar five feet deep and a fathom across: in this we packed our stores, and closed the opening with the firewood which was to be left and with well-trampled snow, to guard against the visits of the white bears. I sent the eight empty sledges back to Nishne Kolymsk with their drivers, who had for some time despaired of seeing their homes again, and were so delighted at the prospect of a speedy return that they soon completed the necessary preparations, and were ready to start before sunrise. I gave them a compass, and Sergeant Reschetnikow took the command of the party. The merchant Bereshnoi chose to remain with our division, which now consisted of ten persons with six sledges, and provisions for fourteen days.

On the 6th of April the temperature was +18° in

the morning, with a S.E. wind, and —2° in the evening. Throughout the night we frequently heard the noise of fresh clefts opening in the ice around us, and a hollow rumbling sound, resembling the rolling of distant thunder. A chain of high winter hummocks to the S.E. appeared to form the southern boundary of the recent openings, which were everywhere visible to the north and east. From these hummocks we saw many other ice-hills to the south, but no spaces of open water. We followed a tolerably smooth narrow path along the south side of the ridge of hummocks, seeking an opportunity of penetrating to the north. The ridge was about a hundred feet high: to our right we had a plain, thickly strewed with blocks of ice, covered with a quantity of loose deep snow, and we inferred from this accumulation of winter snow that they were formed in the autumn, and had been since undisturbed. The ridge on our left had evidently been thrown up within a few days, and belonged, therefore, to the class of spring hummocks. An examination of the recent fracture, and of the clefts by which it was here and there intersected, led me to infer that this ridge had been formed in the following manner: The sea to the north of us had been covered during the winter by smooth ice and compact snow; but in the spring the ice had broken up, partly into an extensive field and partly into smaller pieces, which had been subsequently forced beneath the field, and had gradually raised it into an oblique position. This would account for the smooth, sloping declivity on the south-western side, and for the perpendicular, rugged, and fragmentary formation on the northeastern side. On the top of the ridge we noticed fragments of ice of various sizes, apparently so insecurely supported that we wondered how they could retain their position. One block in particular, which could hardly be less than 1000 cubic feet, rested on a fragment of not more than eight cubic feet.

On the southern declivity was a horizontal cleft rather more than a foot broad, which gave me an opportunity of examining to some extent the internal formation; and I found, to my great surprise, that the upper slab or stratum of ice, which was in this place eleven feet thick, had split into layers of rather more than two feet in thickness. We passed several spots of open water, and found in sounding twelve fathoms, with mud as before. Having gone twenty-nine wersts along the foot of the ridge, which ran S. 6° E., without finding any passage towards the north, we pitched our tent 300 fathoms from a recent fissure, and near a large fragment of ice. A strong breeze prevailed from the east, and the crust beneath us was agitated more or less during the whole time we remained; while in the N.E. quarter there was a loud noise of the crushing together of the icy masses. Our observation at noon gave 71° 15′ latitude, and our longitude by reckoning was 2° 20′ E. from Sucharnoje.

On the 7th of April the weather was clear, with a fresh easterly wind, the thermometer standing at +5° in the morning and —6° in the evening. We continued our route in a southeast direction along the margin of the recent fissure, the ridge of ice becoming lower and less regular or continuous, and the clefts more and more numerous: we sounded thirty wersts from our halting-place, and found twelve fathoms, the ground as before. After travelling forty-nine wersts, we halted at sunrise in latitude 70° 56′, our longitude by reckoning being 3° 5′ E. from Sucharnoje.

On the evening of the 8th heavy clouds came up from the south, and the temperature sunk from +18° to zero. After proceeding ten wersts we came to a wide fissure, across which we ferried ourselves by the aid of a floating block of ice. We tried the current, and found it setting half a knot in an E.S.E. direction: soundings 12½ fathoms. Twenty-two

wersts farther on, we descried in the horizon in a direction S. 2° E., the greater Baranow Rock, which by our reckoning should have borne S. 3° W., distant 114 wersts. While we were discussing this difference, we observed the fresh track of a bear, and M. Matiuschkin and myself gave chase in two sledges which we had emptied for the purpose. We had followed the track for a few wersts, when our attention was suddenly arrested by a distant noise which seemed rapidly approaching, and soon equalled a loud clap of thunder. At the same time the ice beneath us was violently agitated, and began to open in various directions. We thought no more of the bear, but hastened to join our companions. As we were returning, one of our best dogs had a narrow escape. He had been set at liberty to pursue the game, and had run in advance of us a considerable distance: as he returned, his white colour made the Cossacks mistake him for a bear, and one of them had actually levelled his gun before the error was discovered.

As the breaking up of the ice had not extended to the spot where we had left our companions, and as our dogs were tired, we halted for the night; the latitude was 70° 46′, and the longitude 3° 22′ E. of Sucharnoje. Next morning, the 9th of April, we continued our course in a southeast direction, until fissures, open water, and impassable hummocks finally baffled all our efforts, and with broken sledges we were compelled to retrace our steps to the last halting-place. The 10th was Easter-day, kept as a festival throughout the Christian world, and especially in Russia. We joined in the prayers of our far-distant friends by the prescribed service, which was read by M. Bereshnoi, and the hymns were sung by our Cossacks and sledge-drivers. A block of ice was carved to represent an altar, and the only wax-taper we possessed was burned in front of it. The day was one of rest and refreshment to all: our

festive fare, it is true, was frugal enough, consisting of a few reindeer tongues and a little brandy; but a much greater treat was a small fire kept up during most of the day.

On the 11th, the dogs being rested as well as ourselves, we were about to start, when one of the drivers was taken suddenly ill with violent pains in the back, which made motion insupportable to him throughout the day. We availed ourselves of the delay to repair our sledges. The temperature was from +18° to +12°. We frequently heard the sound resembling thunder in the distance, occasioned by the crashing of the ice.

The constantly-increasing obstacles in the direction we desired to pursue, and the slender hopes that could be entertained of surmounting them in the weakened state of our dogs, induced me, after much consideration, to determine on returning to our deposite of provisions, of the safety of which our drivers had for some time entertained doubts. Taking a due west course, we soon came to smooth ice and compact snow, which enabled us to accomplish sixty-four wersts before we halted. Four Pillar Island, which by our reckoning was thirty-eight wersts from us, was just visible on the horizon in the direction S. 62° W. The noon observations made the latitude of our encampment 70° 39′, and the longitude was 1° 45′ E.

The next day we turned to the north, and came on the track left by the returning provision-sledges, which we followed across some hummocks. After accomplishing fifty wersts we halted in latitude 71° 4′.

On the 14th we discovered numerous fresh tracks of bears and stone-foxes, which made us not a little apprehensive for the fate of our store. I followed the tracks to the N.E. with three of the lightest sledges, and soon came on a deserted bear's den a fathom deep in the snow, with two narrow entrances

opposite to each other, and with just room enough to contain two bears. In the neighbourhood was a seal's hole, having on one side a raised bank of snow, through the lower part of which there was a small opening towards the icehole. The polar bears often throw up this sort of parapet close to a seal's hole, and lie in wait behind it: as soon as the seal creeps out from under the ice, he is caught by the powerful paw of the bear thrust through the opening, which at one pull draws him away from his only place of refuge, and he is then soon despatched. The boldness and dexterity of the stone-fox in venturing close to the bear, and carrying off part of his booty, are very remarkable. He is truly the bear's guest, and one generally finds the track of the two animals together. We now came on our old path, which we determined to pursue until it should conduct us to our deposite; and I sent back one of the sledges to tell the rest of our companions to meet us there. We found our former track in great measure broken up. Hummocks had disappeared, and large fissures and lanes had opened since we had travelled it before. These we were obliged, with much labour, either to cross or to go round. At one place my eight dogs fell into the water, and must have dragged the sledge after them but for its great length, which alone saved us. After eleven hours of dangerous and difficult travelling, we reached our deposite, and to our great joy found it unmolested: we saw numerous traces of bears on every side, but, happily, they had not ascended the iceberg. Here we were soon rejoined by our companions, and passed the next day in resting the dogs and repairing the sledges. The temperature was $+7^{\circ}$ in the morning, with a north wind, and $+19^{\circ}$ in the evening, with a west wind. Our noon observation gave the latitude 71° 28′. In the night we were awoke by a sudden and violent barking of the dogs, which indicated the approach of a bear. As we never undressed, we were soon on

our feet, and saw two unusually large bears, which were immediately pursued: in our first eagerness we missed our aim, the animals fled unhurt in different directions, and the hunters scattered themselves in somewhat disorderly pursuit. In vain I tried to recall them: they either did not hear me, or forgot discipline in the mortification of seeing their prey escape. I was left alone among some hummocks, and climbed one of them in the hope of getting sight of the hunters, but I could see only M. Bereshnoi and my driver Tantarinow, who were standing together at some distance from me, the former armed with a gun, and the latter with a bow and lance. A third bear now appeared suddenly from behind a hummock, looked at me intently for a few moments, and then turned in the direction in which his companions had fled, and seemed inclined to follow them; but, on catching sight of the two men who were standing below, he made boldly towards them. As they had but a single charge, their situation was somewhat precarious; but Tatarinow, trusting to his skill, allowed the animal to come within three fathoms, and then fired and wounded him in the shoulder: the beast fled growling and bleeding, and we lost sight of him among the masses of ice. The hunters did not return till morning, when two of their number were still missing, and did not come in till two hours later, and then so exhausted that if the bears had attacked them they must have fallen an easy prey. Thus ended this unfortunate chase, the only result of which was to weary both men and dogs to such a degree that I was obliged to remain another day.

On the 17th of April the day was overcast, with a light breeze from the east, and a temperature of +21° in the morning, and +16° in the evening, with fine snow. There were three halos round the sun. After proceeding nine wersts in a westerly course, we crossed our track of the first of April: we now

left the hummocks behind, and came on a flat surface covered with damp snow; however, our whalebone runners glided freely along, and we accomplished forty-one wersts before halting, in lat. 71° 26′, and long. 0° 43′ E. from Sucharnoje. Next day the temperature was —4° in the morning, with a fresh breeze from the east, and +5° in the evening.

As we had now arrived at a part of the sea which had been visited by M. Hedenström in 1810, I thought it useless to proceed farther in this direction, and directed my course to the south, to survey the islands we had seen from Four Pillar Island, in the meridian of which we now were. This day (April 18th) we made forty-two wersts, notwithstanding the violence of the wind, against which the dogs could sometimes scarcely stand. There was, at the same time, so thick a snowstorm that the persons in the hindermost sledges could not see the leading ones, and were in danger of missing the track, which was every moment effaced by fresh snow. We therefore tied the sledges together in pairs, and fastened the leading dogs of each team to the preceding sledge. In this manner we drove the whole day, unable to see our way, and guided solely by the compass; finding no sheltering hummock, we were forced to halt at last on the open ice-plain. This night was, doubtless, one of the most uncomfortable of our journey. We were exposed to all the fury of the storm, unable either to pitch our tent or light a fire, with a temperature of +7°, without tea or soup, and with nothing to quench our thirst or satisfy our hunger but a few mouthfuls of snow, and a little rye-biscuit and half-spoiled fish. Gladly, therefore, did we the next morning resume our journey, after extracting ourselves and sledges out of the snow, and the dogs, which were still more deeply buried. Our course was southerly, and we proceeded with tolerable rapidity; but, as the dark weather and driving snow still continued, we were not

without fear that we might miss Four Pillar Island. Happily, however, so accurate had been our reckoning, that, after travelling fifty-two wersts, our course led us straight to a bay on the north side of the island, which we did not discern until we were within five wersts of it. After the difficulties through which we had passed, this bay was a welcome haven. We pitched our tent on *terra firma*, under the shelter of a high cliff, and, what was better still, we found an abundance of driftwood, with which we soon made two blazing fires, one for warming ourselves and cooking, and the other for drying our wet clothes, which we had been unable to do for some time; and as we luxuriated in the full enjoyment of the warmth, and drank our hot though somewhat meager soup and refreshing tea, we soon forgot all previous discomforts. Nothing disturbed our satisfaction save the thought that our efforts had not been rewarded by the discovery of the supposed land of which we had been in search.

The next morning we felt quite refreshed, and proceeded N. 65° W. towards the islands we had seen on the previous occasion, the temperature being +9°. On arriving at the first island we were most unexpectedly greeted by the notes of some linnets, the harbingers of spring, and the first cheerful sounds we had heard since we began our journey over the ice: it is impossible to describe the pleasure they produced.

In order to complete the survey of this group of islands the more rapidly, we divided the work. M. Matiuschkin went to the south, and I to the north: at night we met at the north point of the middle island, after surveying three, which lie in the direction of the meridian. We halted here the whole of the next day in consequence of the thickly-drifted snow. On the 23d the weather still continued very bad, but as the drift was a litttle less severe, we proceeded to examine the westernmost island.

Our chart of the Bear Islands will show their configuration far better than any description could do; and I will, therefore, only briefly mention a few remarks which we made during the survey.

The first of these islands, Krestowoi, is the highest and largest of the group. It is distinguished from the rest by two mountains, the most southerly of which has a rounded summit, and is about the centre of the island. The east and north coasts are steep and partly rocky. On the south side, where the shore is more shelving, a stream falls into the sea; the sloping shore on the west side is formed of gravel. We found driftwood in a small bay near the northwestern point of the island. It consists here, as elsewhere in this group, chiefly of larch mixed with a few poplars, but with scarcely any firs. From the many dens and burrows, this island would appear to be visited by a great number of stone-foxes, wolves, and bears, and to be inhabited by multitudes of field-mice. On the southern side we saw a few reindeer: our encampment was in latitude 70° 52′, and the longitude, trigonometrically deduced, was 1° 21′ W. from Sucharnoje.

The second island, which is little more than a mass of fragments of granite, is about 200 fathoms long and 150 fathoms broad: we found here only a few decayed trunks of larch trees. This little island is not marked in Leontjew's chart; and it was probably concealed by masses of ice, which still surround it on every side.

The third island is itself high, but has no hills; there are a few rocks on the south side, and more on the east and west, where they run out some distance to sea. The shore is shelving in the bays.

Near the east point of the island there was a kind of cellar dug in the earth, supported by posts; but we could not examine the interior, as it would have taken us too long to clear out the snow. We found on the beach a very old oar, of the kind which

the Jukahirs used in their *wetkas*;* we also saw some reindeer sinews and some human bones, but no scull.

On the fourth island there are two long, high ridges, running parallel to each other in a N.N.W. and E.S.E. direction, connected by a cross-ridge. Where the surface was clear of snow, it appeared to consist of a thin layer of gravel and vegetable earth, covered with fragments of the same rock as that which forms the pillars in the sixth island already described. The cliffs on the northern shore are also of the same rock. The southern shore consists of steep earth-hills, with a quantity of mammoth bones. By our observations, the north point of this island is in 70° 47′. The variation of the needle was 14° east.

The fifth island is tolerably high, with cliffs of the same rock as that which forms the western point of the sixth island. Here were some indications of sulphur.

The sixth, or Four Pillar Island, has been already described.

During our halt of the 23d, one of our drivers, in the boasting spirit common among these people, assured us that he had been, many years ago, on the first Bear Island, which he said was visible from the mouth of the Krestowaja River, from which it had been named; he farther said that this island was small, circular, and not at all like the one on which we now were.

Though I had not much confidence in the driver's story, I resolved not to omit anything which could be done towards investigating the subject, and there-

* *Wetka* is the name of a light, long, narrow boat, formed of three boards, used principally for reindeer hunting. Usually only one man sits in these boats, with a single oar having a paddle at each end, which he plies alternately right and left. The *wetkas* are very rapid, and so light that they can easily be drawn from one lake or river to another.

fore decided to look for the island in question by taking a S.S.W. ¼ W. direction towards the Cape Krestowoi of Leontjew's map. The E.N.E. wind rose gradually, but as it was in our backs, and the snow was smooth, we had soon gone over 44 wersts, notwithstanding the drifting snow, when we suddenly perceived that we were no longer on the ice, but on land. At first we thought we had reached the island we were seeking, but in a few minutes we heard an exclamation from one of our drivers, who had found a fox-trap bearing his own mark, whereby we knew that we were on the mainland, not far from the River Agasonowka. He conducted us, notwithstanding the thick drift, to a *balagan* at the mouth of the river, where we had once more the comfort of a roof and walls. Our provisions being now exhausted, and the season far advanced, we determined to return home by the shortest route. I would gladly have taken the opportunity of laying down this part of the coast, but the state of the weather made it impossible. The wind was from the N.E., and became more and more violent, and the atmosphere was completely darkened by the driving snow. We abandoned ourselves entirely to the guidance of our drivers, who were thoroughly acquainted with the district. They brought us, on the 25th of April, to a *powarna* near the mouth of the greater Tschukotschje, where the shore forms a high cape.

On the 26th we crossed the hills to a river called Jakutskaja Wiska, a distance of 24 wersts, and after driving six wersts farther across a *tundra*, we came to the Jakuts lake, where one of our drivers had a store of fish, from which he entertained us. The fish were preserved in a kind of cellar hewn out of the ice of the lake: the opening had been closed with ice and snow, over which water had been poured, so that the surface of the lake showed no traces of the store beneath, and it was perfectly inaccessi-

ble to bears. While we were busied in opening and reclosing the ice-cellar, a large herd of reindeer ran by at no great distance. The sight of them had nearly cost us dear, for our dogs all set off in pursuit, and we had great difficulty in recalling them. We slept at a *balagan* 30 wersts farther on.

On the 27th of April the weather changed, the snow ceased, and we had a cutting S.W. wind, with a temperature of —2°. We came on a beaten track, which conducted us across a lake to a village on the lesser Tschukotschje. This place, which consists of fifteen old huts and a ruined barrack, is deserted in winter, but is resorted to in summer for fishing by the inhabitants of the village of Pochodsk, fifty wersts distant, and which we reached late in the night. Poor as this settlement is, its aspect filled us with pleasurable sensations; we saw a few places among the huts where the spring had melted the snow, and where brown earth was visible; smoking chimneys, and the faint glimmer of lamps through the ice windows, told us that we were again among human beings. The barking of the dogs announced our arrival, and from every door we heard the grateful sound of the Russian "welcome." We were soon seated, surrounded by smiling faces, near a stove in a warm room, where we could throw off our frozen furs, and really rest from the toils and privations of the icy desert. Our kind hosts soon placed before us the best entertainment their poverty could furnish, giving us, among other things, some fresh-killed ptarmigan in our soup; and thus, in the enjoyment of comforts to which we had been long unaccustomed, and in friendly conversation, the hours passed rapidly away.

We continued our journey the next day, and arrived at Nishne Kolymsk on the 28th of April, after an absence of 36 days, during which we had travelled 1210 wersts with the same dogs.

CHAPTER VIII.

Nishne Kolymsk.—Spring.—Scarcity.—Fisheries for the supply of the Expedition.—Building a Shallop.—Plans for the Summer.—Warm Weather.—Moschetoes.—Embark in the new Boat.—Accident to M. Matiuschkin.—Reindeer Hunting in the Tundra.—Arrival at Tschukotschje.—Departure of M. Kosmin to survey the Coast as far as the Indigirka.—Return up the Kolyma.—Tent burned.—Arrival at Nishne Kolymsk.—Visit to the Jakuti of Sredne Kolymsk.—Their Summer Life and Habitations.—Traditions.—Albuty.—Early Snow.—Return to Nishne Kolymsk.—Arrival of MM. Matiuschkin, Kyber, and Kosmin.

On arriving at Nishne Kolymsk, we found that spring had already brought its accustomed scarcity, with the consequent train of suffering and disease. As soon as the ice of the river began to melt, the whole population dispersed to their summer habitations on the banks of the different rivers in pursuit of fish and game. The experience of the past year had taught us that we could not rely on the natives for the supplies necessary for our expedition, as they make but inadequate provision for their own wants, and that for this we must depend upon ourselves. I therefore hastened to send some people with nets and baskets to the most favourable fishing-places before the sledging season was quite over, and fixed on the lesser Tschukotschje as the head-quarters of our several parties, it being a very productive river, and less frequented than most others. Tatarinow was charged with the general superintendence of the fisheries, and I felt secure that we should obtain a sufficient supply.

My next care was how we could best employ the short summer. I decided that one division should proceed on horseback to survey the coast between

the Kolyma and the Indigirka, and that another division should make an accurate survey of the mouths of the Kolyma in boats. A small dwelling, also, and a magazine for provisions, were to be erected at the mouth of the great Baranicha, for the use of our coming winter expedition. Lastly, Dr. Kyber, who had now recovered from his illness, undertook, by his own desire, to examine the country on the banks of the greater and the lesser Aniuj.

It may seem strange that we should have proposed to make a coast survey on horseback rather than with reindeer or in boats; but a full consideration of the subject convinced me that reindeer would not be equal, in summer, to such long days' journeys as we should require to make, and that they would be also more expensive than horses; and that boats would not answer, on account of the extensive shallows and sandbanks, which prevent a near approach to the shore; and, moreover, that any small vessel would run great risk of destruction from the large pieces of ice which are always drifting along the coast. We agreed with the Jakuti of Sredne Kolymsk for a sufficient number of horses, and for trustworthy guides acquainted with the country. The coast survey I intrusted to M. Matiuschkin, and undertook that of the Kolyma myself. I farther profited by a journey which our travelling companion, M. Bereshnoi, was about to make on horseback to the eastern Tundra to search for mammoth bones,* to send with him Sergeant Reschet-

* Throughout Siberia, but more especially in the northern and northeastern parts, mammoth bones and teeth (or, as they are there called, *horns*) are found in clay hills, in the Tundras, and along the banks of the rivers. The best season for searching for these antediluvian remains is in spring, when the streams, swollen by the melting snows, overflow their banks and undermine the hills; and it is at this season that the inhabitants resort to those localities which are known to be productive. Very long journeys are often taken for this object, and usually with good success.

nikow, with a good carpenter and two assistants, to build a large *powarna* and a storehouse of driftwood at a convenient spot near the Baranicha River.

During our absence on our second journey over the ice, M. Kosmin had been engaged in the building of a large boat or shallop, which he had brought to a successful conclusion in spite of the deficiencies of all kinds under which he laboured. He had fortunately found under the snow a sufficient quantity of knee-timber for the framework, and after the scaffolding was erected, and the artificers understood their instructions, the work proceeded so rapidly that in May a vessel was completed, of excellent construction in all its parts.

On the 25th of May the ice of the river broke up, and on the following night the first shower of rain fell. The banks and sunny slopes began now to be covered with grass; the willows opened their buds and put forth young leaves, and the short summer advanced rapidly; the temperature increased to + 55°, and even to + 68°, and the progress of vegetation was sensible to the eye; but the enjoyment we felt in returning spring was of short duration. The 4th of June brought, as at this season are usual, immense swarms of moschetoes, whose insufferable stings obliged us to take refuge in the house, and to keep up in front of the doors and windows a constant smoke, by which we were almost suffocated, and our eyes greatly inflamed. We rejoiced, therefore, most heartily, when, on the 9th of June, a strong north wind suddenly lowered the temperature from + 59° to + 38°, and drove away these troublesome enemies. At length we could enjoy the delight of breathing the air of heaven without either being tormented by insects or frozen; we roamed, therefore, with our guns over the country, seldom returning till late in the evening, and always loaded with wild-fowl. The first bird of passage had been seen on the 29th of April; but now large flights were con-

tinually passing to the north, and occasionally alighting on the grassy slopes, where great numbers were killed.

We were not able to launch our shallop, which we named the *Kolyma*, until the 11th of June, when the inundation subsided. The sails were made from those that had been used for Captain Billings's vessels, and the anchor we forged ourselves from remnants of iron belonging to the same expedition. We had built, besides, a small boat for crossing shallows. This last was after the pattern of the country *wetka*, but larger, and could carry three men.

All our preparations being completed, our whole party embarked together. Dr. Kyber was to leave us at the first village, and MM. Matiuschkin and Kosmin at the lesser Tschukotschje River, where the horses were to meet them, and where they were to commence their survey. We had four oars, and the current in our favour; but as it ran only three quarters of a knot an hour, and the wind was blowing fresh and dead against us, we were obliged to stop short after proceeding five wersts.

Mortified as we were at this detention, we had soon to regret a more serious misfortune, which our companions looked upon as an evil omen, and which obliged us to alter our plans materially for the summer. As we were about to land, one of our dogs, in jumping from the boat to swim on shore, became entangled in a loose rope, and would inevitably have been strangled if M. Matiuschkin had not sprung to his aid; but, unfortunately, that gentleman (in his eagerness to release our faithful follower), in cutting the rope, cut off at the same time a large part of his own thumb. The wound was a bad one, and Dr. Kyber was of opinion that it might easily become dangerous. I therefore sent the doctor and his patient in the boat back to Nishne Kolymsk, to wait there until the wound should be healed, which

the doctor considered would require a month, and it was also arranged that they should then travel together up the Aniuj.

As soon as the boat returned, M. Kosmin and I continued our voyage, and arrived on the 28th of June at the lesser Tschukotschje River. We visited by the way the villages of Tschernoussow and Pochodsk, to inquire after the fisheries. Our parties had been successful, and we saw large quantities of fish drying on scaffolds about every house. Great numbers are taken at this season in descending the stream. The fishery is usually conducted by the whole of the little community uniting to erect a dam across the river, leaving an opening in the middle, in which the baskets are placed; the produce being divided according to established rules. After the dam has been formed, the rest of the work is so light that the men usually leave it to be attended to by the women, while they themselves follow the chase; some proceeding in *karbasses** to the best localities for fowling, and bringing home large quantities of ducks and geese, and others on horseback following the reindeer along the valleys and streams. Two hunters usually go together, each dragging after him a light *wetka*, and being followed by two or more trained dogs. Sometimes they find the reindeer standing up to their necks in water, to avoid the moschetoes and to keep themselves cool, and sometimes the dogs drive them into the river. Meanwhile the hunters launch their light canoes, which they can paddle faster than the deer can swim, and having succeeded in hemming them in, they despatch them with a kind of light spear called *pokoliuga*. If, as often occurs, they cannot at once

* The *karbasses* are large, heavy, flat-bottomed boats, formed of hollow trunks of trees, carrying a lading of fifty pood weight. The best are made from the largest and soundest trees of a poplar-like species of aspen, which grows around Werchne Kolymsk.

carry their spoil home, they bury it in the under-stratum of constantly-frozen earth until they can come with sledges to take it away; in which case it not unfrequently happens that the wolves are beforehand with them, and the hunters find nothing left but the bones. While we were in this district, we came quite unexpectedly upon a large herd of reindeer, lying quietly in the water, above which their huge antlers rose like the dry branches of a grove of trees. Two of our Jukahirs threw themselves instantly into the light boat and gave chase; but not being properly armed, they only succeeded in killing two females. We, who were in the large boat, shot a fine buck. The rest of the herd gained the bank in safety, and soon disappeared.

We were disappointed in finding that the horses we had ordered had not yet arrived at the lesser Tschukotschje. It was some comfort, however, to see that our fishery at this place was proceeding most prosperously. The drying-scaffolds were completely covered with fish, chiefly herrings, and the species called *tschir*, and we all set ourselves to work to erect more scaffolds, which were soon likewise filled.

On the 1st of July a Jakut arrived, bringing five horses, and the very unwelcome intelligence that it was impossible to procure more. Of these five, only two were strong enough to carry the tent, provisions, and instruments, and there remained only three weak horses for riding. But for the great and well-grounded confidence which I felt in M. Kosmin's experience, ability, and persevering energy, I could not have ventured on despatching no more than three persons, with indifferent horses, on such a journey, across a desert region, intersected by numerous broad and rapid streams, and devoid of all resources. Having given him my final instructions, he set out on the 2d of July, accompanied by

the Jakut and a young Cossack. They took with them two light *wetkas* for crossing the rivers.*

The next day, some men, whom I had sent down the river in the *karbass* to shoot geese and swans, returned with information that Tschukotskaja Bay, and even the mouth of the river itself, were still covered with solid ice. I was therefore obliged, most reluctantly, to await a change in the wind, which was now blowing freshly from the north and north-west, and driving the sea-ice into the river instead of clearing it. Day after day we examined the state of the ice, and still found it impossible for a boat to pass; so that at length I thought it best to give up the attempt for the present, and turned my back on this desert plain, where the eye is uncheered by the sight of a tree, a shrub, or even a blade of green grass. Though it was July, the wind from the north was keen and very cold; snow fell frequently, and remained whole days on the ground without melting. While returning in the boat, I occupied myself in surveying, and in determining the position of some of the most remarkable points on the Kolyma. On the 15th of July I was at the mouth of the Krutaja, in the parallel of the Sucharnaja Mountain, the latitude of which I wished to determine. My tent had been pitched among some willow bushes, and a small fire had been lighted on the windward side, in order that the smoke from it might drive away the moschetoes which had reappeared on the weather becoming a little milder. I had only two people with me, having left one sailor behind to hunt, while the rest had returned to their homes, to procure the necessary provisions for their families. It really seemed as if my present attempt, which had had such an

* The account of this journey, as it consists almost entirely of topographical details, barren of interest to the general reader, and is unconnected with the general narrative, has been omitted. M. Kosmin's survey extended from the mouth of the Kolyma to that of the eastern branch of the Indigirka.—*Am. Ed.*

ill-omened beginning, was fated not to succeed; for after all the vexatious delays already met with, an accident happened which had nearly deprived me of the fruits of all our preceding labours. We had rowed, as usual, into the middle of the stream, to procure pure water for cooking, that near the banks being muddy, and had not thought it necessary to extinguish the fire for so short an absence, when a sudden gust of wind drove it towards the tent, and before we could reach the shore everything was in a blaze. The loss was a very serious one, but it would have been far more so if I had not succeeded in rescuing a box containing all my papers, journals, charts, and instruments, before the flames had penetrated the thick covering of furs in which it was enveloped.

This accident, by destroying many articles indispensable for our voyage, decided my return to Nishne Kolymsk. We arrived there on the 20th of July, and found MM. Matiuschkin and Kyber preparing for their journey up the Aniuj. As I had taken cold, and suffered much from rheumatism, Dr. Kyber advised me to go to Sredne Kolymsk, where the milder and less variable climate, and the use of lighter and fresher food, would probably contribute materially to restore my health. Accordingly, I took the boat up the Kolyma on the 26th, and the two travellers to the Aniuj left Nishne Kolymsk the same day.

The farther I receded from the low lands, which are subject to the blighting influence of the Polar Sea, the more pleasing became the aspect of the country, which loses the dreary uniformity of the Arctic region, and is inhabited by a well-disposed and industrious population, the Jakuti of Sredne Kolymsk. I quitted my boat at the village of Nisowoi Albut, which is the most northern Jakutian settlement, and is distant 150 wersts from the town of Sredne Kolymsk, and continued my journey on

horseback. After so many months passed among icy deserts, the fields here covered with luxuriant grass, the vigorous larch-trees, poplars, and willows, the numerous herds, and frequent settlements, altogether appeared like quite a paradise to me. The soil, the vegetation, the milder air, the whole aspect of nature, breathed life and cheerfulness.

The vegetation is especially luxuriant in the *albuty*, or dried-up lakes, which are numerous in this district, and form one of the peculiar features of Northern Siberia. These flat valleys are occasionally filled with water by the overflowing of the rivers in spring, when they are converted into lakes of various sizes, all abounding in fish. The intense frosts of winter cause large clefts in the ground, by which the water drains off, sometimes in the course of a single year, sometimes in several. The rich alluvial soil thus exposed soon becomes covered with a luxuriant growth of the finest grass, and the Jakuti never fail to settle near these fresh pastures, so that most of the settlements in this district are called *albuty*.*

The aspect of these summer settlements, with the cattle feeding about them, and the herdsmen not muffled in furs, but dressed in light and convenient clothing, was most pleasing. I was particularly struck by the summer habitation (*letowje*) of a wealthy Jakut chief, who had come with his whole tribe, and with his herds of cattle and horses, from the forests where they had spent the winter. His *uross*† was surrounded by similar but smaller huts, in which his nearest kinsfolk and his servants were lodged;

* A curious phenomenon occurs in the lakes in the vicinity of the village of Alaseja. In the middle of winter the water sometimes suddenly disappears, without any side channels being visible. In such cases a loud noise is heard at the time, and when the bottom of the lake is laid bare, large fissures are visible, occasioned by the severity of the frost.

† Described in chapter ii., p. 38.

and the whole was surrounded by an extensive fence, within which the cattle were driven at night. Everything announced a prosperous condition, associated with patriarchal simplicity, peace, and purity of manners. The hospitable and friendly reception which I met with, the mildness of the air in these valleys, which are sheltered by the surrounding hills and forests, the abundance of excellent milk and other fresh food, and, finally, the complete repose of mind which I enjoyed, while away from all anxious employment, and surrounded by the beauties of nature, all combined to induce me to spend the short remains of summer here, in laying in a store of health and strength against the toils of the following winter. I soon felt the beneficial effects of this new mode of life, and I shall ever remember with gratitude and pleasure the time which I passed among these kind, and, as they appeared to me, happy people.

I made several excursions on foot to different *albuty*, twenty or thirty wersts off. In one of them, called Sul'gi Etar (horse-pasture), I met with a Jakut eighty-two years of age, named after Lieutenant Laptew, who visited the Kolyma in 1739. He had married a Russian woman, and could not only speak Russian fluently, but also read and wrote it with ease. In spite of his great age, he was so healthy and vigorous that he used to ride long distances with the young men, drive the cattle to and from their pasture, and take his share in most of the country occupations. He was very fond of tea and of punch, which are very expensive luxuries in this place. I passed many agreeable hours with this unusually intelligent Jakut. He complained of the ignorance of his countrymen, who, he said, had been formerly more civilized; and that, before they separated from the other Tartar races to which they are allied, they had possessed written characters, and, consequently, means of intellectual cultivation

which they have since lost. He asserted that his tribe had once inhabited far distant southern regions, and in proof of it he quoted several popular sayings, in which gold and gems, lions and tigers, are mentioned, of which they are now entirely ignorant. He was unable to speak more definitely concerning their earlier condition and country, as such accounts have only been handed down by traditions, which have been in great measure lost since *Schamanism* has yielded to Christianity. He said that litigiousness, dishonesty, and deceit had increased, and complained particularly that the immoderate use of spirituous liquors (of which, by-the-way, he was rather fond himself) had caused such a physical deterioration in the race, that no one now attained to the age of a hundred years and upward, as was often the case in his father's time. He talked much of the severity of the climate, the frequent failure of the hay-harvest, and the ravages of wolves. I will here recount all that I could collect from his narrations and from conversation with his countrymen concerning their earliest history.

The Jakuti who live on the banks of the Kolyma are not the original inhabitants of the country; their predecessors were the Omoki, the Schelagi, the Tungusi, and the Jukahiri. The Omoki, who were settled fishermen, and the Schelagi, who were a nomade people having reindeer, have so wholly disappeared, partly from wars with intruders, and partly from devastating sickness, that their names are now scarcely remembered. The Jukahiri, also, who were once a numerous nomade race, have greatly diminished. Most of them, having lost their reindeer by disease, now live poorly as fishermen along the banks of different rivers; while a few, who have preserved their reindeer, have withdrawn with them into the *tundras* near the sea. The Jakuti alone have not only kept up their numbers, but have advanced very considerably in population, and

in the cultivation of the soil. To them belongs the merit of having introduced the rearing of cattle and horses, and other branches of rural industry, into a region where the soil, and still more the climate, appeared to forbid all such attempts, and thus securing not merely a subsistence, but some degree of comfort. They may be said to have rendered these inhospitable steppes accessible to the intrepid descendants of Jermak, who have brought with them Christianity, and rescued an ignorant and superstitious people from the delusions of *Schamanism* and its barbarous customs.* The Jakuti are now all baptized. A priest from Sredne Kolymsk visits these settlements every year. An ecclesiastic named Slezzow, who resided here twenty years ago, manifested great courage and zeal in abolishing *Schamanism*. Wherever he found any idols or heathen altars, he caused them to be destroyed by fire or thrown into the water, and none such are now to be met with. There are still, however, as I have noticed in a former chapter, *schamans*, who continue to have a few adherents, and are generally consulted, and even by Russians, in regard to finding a stray beast or discovering stolen property. What has been said of the Jakuti of the Jakuzk district will apply to those of the Kolyma. Their language, their habitations, their clothing, and their modes of life, are the same; but the hunting weapons of those of the Kolyma consist only of bows and arrows, and a large knife called *pal'ma*.

As their horses subsist during winter on the grass which they find under the snow, the Jakuti migrate in spring with their herds, in order to leave the pas-

* It was a frequent practice to expose new-born female children in baskets, suspended from the branches of trees. Sometimes it happened that, before the infants perished from cold and hunger, they were found and adopted by strangers; and old women are still to be met with in families of which they became members in this way.

ture in the neighbourhood of their winter-dwellings undisturbed. The number of horned cattle they can keep depends on the quantity of winter-forage which they are able to obtain, and nothing can exceed the industry with which they pursue this most important object during the short summer. Throughout the whole of the hay-making season they live almost entirely on kumyss, of which they drink great quantities. It agrees with them remarkably well, and they grow fat and strong with scarcely any other food. One of the greatest disasters which can befall them is a sudden and early winter, cutting short the hay-harvest. Such was the case the present year. A keen wind from the northwest set in on the 22d of August, with a heavy fall of snow, which covered all the hay remaining in the meadows; and as only part of it had been stacked, the loss was very great. It was followed by such severe cold that the lakes froze, and troops of wolves came out of the forest and carried off above eighty cows. At the same time, the Kolyma was so unusually swollen that the fishery in a great measure failed. A winter of scarcity, therefore, seemed inevitable; but nothing appeared to distress the herdsmen so much as being obliged, on account of their insufficient store of hay, to diminish still farther the number of their cattle, so many of which they had already lost by the ravages of the wolves.

It was now time for me to return to Nishne Kolymsk. I parted from these kind people, among whom I had recovered my health, and who were cheerful and happy when I first came among them, without being able to offer them anything in their distress except the expression of my sincere sympathy. I left them on the 31st of August, and passed the night 40 wersts off, at a Russian village on the banks of the Timkina. The next day, September 1st, I found that my boat was already frozen in, and we had some difficulty in working it for two wersts

through the ice which covered the small river: this brought us to the Kolyma, which, owing to its greater breadth and stronger current, was still free from ice. We rapidly descended its stream, and arrived the same day at Nishne Kolymsk.

I found there Sergeant Reschetnikow, who had returned from the Baranicha after having completed the buildings. He and his people had been frequently disturbed at their work by dangerous visits from white bears. I learned from him that large numbers of swans and geese resorted to that neighbourhood for breeding and moulting, and that part of the sea abounded with a species of fish resembling loaches (*schmerlen*), called *golzy*. The sailor whom I had left at the mouth of the lesser Tschukotschje returned soon afterward, and informed me that both that river and the eastern mouth of the Kolyma had been completely frozen over as early as the 21st of August. Violent storms and frequent falls of snow had prevented him from shooting more than sixty head of swans and geese. The fishery, however, had been very successful.

Winter was now rapidly approaching: on the 6th of September there was much floating ice, and on the 8th the Kolyma was fast frozen over. The inhabitants had not yet returned from their summer occupations, and their deserted houses were completely buried in snow, which had fallen almost without intermission. The only person who usually remains in the village during the summer is an old Cossack, who has charge of the town chancery. His solitude had been shared the present season by an old woman, who was too infirm to accompany her friends; and on my arrival the whole population consisted of these two persons, myself, and three men belonging to our expedition. The inhabitants, however, gradually returned, and with much labour opened paths to their houses and cleared out the snow, which had in may cases filled the

rooms, as the ice windows had melted during the summer, and the slight shutters had not been, in all cases, sufficiently strong to resist the storms of wind and keep out the drifting snow. The tidings brought by the new-comers were by no means cheering: some complained of failure in hunting, others in fishing, and all looked forward to a winter of distress and scarcity. Amid this general anxiety I was gladdened by the arrival of the post from Jakuzk: long-looked-for letters carried me back in imagination to my far-distant friends and kindred, and afforded me inexpressible delight, checked, however, by the recollection that they had been six months in reaching me from St. Petersburgh.

On the 29th of September MM. Matiuschkin and Kyber returned from their journey up the greater and the lesser Aniuj, and a week later we rejoiced at the safe return of M. Kosmin from his coast expedition to the Indigirka. We were now all once more assembled, and, after spending the days in arranging our papers and journals, and entering our observations on the charts, we gathered round the social hearth, and whiled away the long evenings in recounting our several adventures.

CHAPTER IX.

M. MATIUSCHKIN'S ACCOUNT OF A JOURNEY ALONG THE LESSER AND THE GREATER ANIUJ RIVERS.

THE LESSER ANIUJ.

Departure from Nishne Kolymsk.—Mammoth Bones.—Arrival at Plotbischtsche.—Aboriginal Population of this District.—Present Inhabitants.—Causes of the Scantiness of the Population.—Jukahiri.—Migration of the Reindeer in Spring and Summer.—Departure from Plotbischtsche.—Argunowo.—Poginden.—Termination of the Journey.—The Rock Obrom.—Return to Plotbischtsche.—General Remarks on the Lesser Aniuj.

On the 20th of June, 1821, Dr. Kyber and myself embarked in a small boat, and with a fresh N.N.W. wind entered the great Aniuj, which empties itself by three arms into the Kolyma, opposite to the *ostrog* of Nishne Kolymsk. We were followed by the *karbass* in which our voyage was to be made: our few packages were soon transferred, and we rowed quickly up the stream, which is here about a werst broad, and has scarcely any current. We reached in the night the mouths of two smaller *wiski* (streams having their origin in lakes), which are much resorted to for fishing by means of weirs and baskets, and are very productive, both in spring, when the fish are passing up to the lakes, and in summer, when they are returning to the sea, and many summer-dwellings have been erected here in consequence. We were detained in engaging rowers and making such arrangements as were necessary till the 23d, when we resumed our voyage.

About ten wersts higher up we passed the mouth of the River Bajukowa, which rises in some distant mountains just visible to the south. Soon after we

came to where the greater and the lesser, or dry Aniuj, unite; and, entering the latter, and having followed its windings for twenty wersts, we stopped for the night at a low, sandy island, where we were secure from the visits of the numerous bears which we saw on both sides of the river. The two next days, the 24th and 25th, we were favoured by the wind, and advanced rapidly. The boat being entirely open, we were completely wet through by the heavy rain which had fallen incessantly during the last three days, and were delighted to meet, at a place called Kildan, with a *balagan*, which had been erected for their use by the merchants who travel to Ostrownoje. We remained there the next day to make several little alterations and improvements in our boat, one of which was to put up a slender mast, to which a towline could be fastened, as the rapid current higher up would probably render such a mode of proceeding necessary. I employed myself meanwhile in arrangements respecting my journal, map, &c. To lay down precisely all the different windings and distances would be considered a useless application of time and labour, and I therefore contented myself with taking observations of latitude and angles of azimuth for determining the principal points.

The banks of the river thus far resembled those of the lower Kolyma in their dreary uniformity, but we now began to meet with better pastures. The right bank is much higher than the left. It consists of steep sandhills 30 or more fathoms high, held together only by frosts which the summer is too short to dissolve. Most of the hills were frozen as hard as a rock: nothing thaws but a thin outside layer, though, from being gradually undermined by the water, large masses of frozen sand frequently break off and fall into the stream. When this happens, mammoth bones in a more or less perfect state of preservation are generally found: we saw a few

bones, and a scull, which looked to me like that of a rhinoceros.*

* Without entering in this place into any speculations concerning the manner in which these probably antediluvian remains came into their present situations, I would call attention to the remarkable fact that the teeth, tusks, and bones, which are called by the general name of mammoth bones, but which probably belong to several different species of animals, are not distributed equally over Siberia, but form immense local accumulations, which become both richer and are more extensive the farther one advances to the north. They are found in the greatest abundance in New Siberia and the Lachow Islands,* as mentioned by Reschetnikow and Sannikow.† Many hundred

* Protodiakanow, the companion of Lachow, states that the soil of the first of these islands, which consists only of sand and ice, contains such a quantity of mammoth bones that they seem to form the principal material of the island; and that among these bones there are found the scull and horns of an animal resembling the buffalo.—*Am. Ed.*

† Sannikow, who visited the Island of Kotelnoi, near New-Siberia, in 1811, relates that he found on the hills in the interior of that island vast quantities of the sculls and other bones of horses, buffaloes, oxen, and sheep; and he concludes that the island must have once enjoyed a climate so mild that these animals lived there, in company, perhaps, with the mammoth, whose bones, also, everywhere abound. In farther support of this opinion, he adduces the fact that large trees, in a partially fossilized state, are frequently found here as well as in New-Siberia. A particular account of these remarkable vegetable remains in the latter island is given by Hedenström: "On the southern coast of New-Siberia," he says, "are found the remarkable Wood Hills. They are 30 fathoms high, and consist of horizontal strata of sandstone, alternating with strata of bituminous beams or trunks of trees. On ascending these hills, fossilized charcoal is everywhere met with, covered apparently with ashes; but, on closer examination, this ash is also found to be a petrifaction, and so hard that it can scarcely be scraped off with a knife. On the summit another curiosity is found, namely, a long row of beams resembling the former, but fixed perpendicularly in the sandstone. The ends, which project from seven to ten inches, are for the most part broken. The whole has the appearance of a ruinous dike." Lieutenant Anjou likewise examined these Wood Hills: he says, "They form a steep declivity 20 fathoms high, extending about five wersts along the coast. In this bank, which is exposed to the sea, beams or trunks of trees are found, generally in a horizontal position, but with great irregularity, fifty or more of them together, the largest being about ten inches in diameter. The wood is not very hard, is friable, has a black colour, and a slight gloss. When laid on the fire it does not burn with a flame, but glimmers, and emits a resinous odour." These facts certainly show that at some distant period a great change must have taken place; but whether a change of climate, or, as is more probable, some great revolution of nature, transferring these animal and vegetable wrecks from a more southern region, must be matter of conjecture.—*Am. Ed.*

As we ascended the stream the current became much more rapid; the river makes a number of short bends, and forms many small islands. Its bed is strewed with rough, sharp-pointed stones, against one of which our boat was driven, and sprung aleak; but we drew it on shore, and repaired the damage in the course of two hours. The banks became higher as we receded from Kildan; the fine reddish sand was replaced by gravel and stone, and at Molotkowo we saw slate rocks intersected by veins of quartz.

The strength of the current prevented us from reaching Plotbischtsche until the third day. It is here that the reindeer usually cross the river in their autumn migration, and we found crowds of hunters impatiently waiting their passage. It was an anxious time, for many of the settlements were already threatened with a deficiency of food. We were hospitably received by a Jukahir chief named Korkin, who gave us the best he had, namely, dried reindeer venison and train oil, for which he refused any compensation. Under the existing circumstances of scarcity and doubt, this liberality, which was extended to many of the hunters as well as to ourselves, might appear to savour of improvidence; but such is true hospitality, which prevails throughout the Russian empire, from St. Petersburgh to Kamtschatka, from the Caucasus to the Polar Sea; and among the nomades of Siberia especially, the best is always for the guest.*

Dr. Kyber wished to remain here a short time, partly for medical inquiries and partly for researches in natural history. I endeavoured, meanwhile, to

pood weight are collected there every year, whereas on the Continent they are much more rare, and are hardly ever met with in the southern part of Siberia.

* This is substantially true. The Russians are remarkable for their hospitality. Cheerfulness, kindness, and good-nature are striking traits in their character.—*Am. Ed.*

learn as much as I could respecting the past and present condition of the inhabitants. Before the conquest of Siberia by the Russians, the population was everywhere greater than at present. Some numerous tribes (as has been before observed) have left only their names behind; and yet there are still, on a comparatively small surface, eight or ten distinct races, some consisting of only a few families, but all distinguishable from each other by language, customs, and features: they appear to be *fragments* of more numerous tribes, some of them having come, perhaps, from a great distance. The more independent nomade races retreated before their invaders farther and farther to the east. Our host maintained that he himself was descended from the Omoki,* and that their language was still preserved in his family.

This nation appears to have possessed a certain degree of civilization, and, among other things, to have been acquainted with the use of iron before the arrival of the Russians. As the Russian conquests advanced, and as the smallpox and other contagious diseases which accompanied or preceded their course committed fearful ravages, the Omoki determined to remove, and left the banks of the Kolyma in two large divisions, with their reindeer. According to the account of my host, they went northward, but he could not tell where: probably they turned to the west along the coast of the Polar Sea, for there are now near the mouth of the Indigirka traces of numerous *jurti*, though the oldest inhabitants have no knowledge of there ever having been any settlement in that part of the country. The place is still called Omokskoje Jurtowischtsche.†

The deserted banks of the Kolyma were gradual-

* See chapter iii., p. 64.

† Where are the remnants of this once numerous nation now to be found? Can it be in Europe and on the banks of the Petschora, as some vague traditions would seem to suggest?

ly occupied by different tribes, of which the most important were the Jukahiri, the Tungusi from the steppes on the Amur, and the Tschuwanzi, who were pressed hither from the banks of the Anadyr by the Tschuktschi. Such was the state of things in 1750, when Pawluzkij, *waiwod* of Jakuzk, supported by the then numerous Tschuwanzi and Jukahiri, undertook a campaign against the Tschuktschi. In this warfare most of the Tschuwanzi perished, and also a great number of the Jukahiri, while the remainder, as well as the Russians, were dreadfully scourged by malignant fevers, smallpox in its most fatal form, and other contagious disorders, some of which are not even yet entirely extirpated. There are now on the lesser Aniuj only a few families of the Jukahiri, who, having lost their reindeer, have been obliged to relinquish their nomade life. They have been baptized, have gradually laid aside their national peculiarities, and all speak the Russian language. Their habitations and dress resemble, and were probably the originals of, those already described at Nishne Kolymsk. They have generally black eyes, dark hair, a rather long and remarkably pale face, and tolerably regular features.

They still possess the cheerful disposition, unbounded hospitality, and other similar good qualities which usually characterize a nomade people, and which are often lost by civilization; but in their intercourse with the Russians, whom they still regard as oppressors, they manifest a sort of distrustful dissimulation, and will go great lengths to overreach them in trade. They are passionately fond of music, and almost all of them play some airs on the violin or the *balalajka*. The women have rather agreeable voices. Their singing is quite peculiar: irregular and wild, but, after the ear has become accustomed to it, not unpleasing. They generally improvise both the words and the air, though the words have nothing original, appearing to be borrowed or imitated from the Russians.

The fisheries along the banks of the Aniuj are not very important, as the larger kinds of fish are not met with above Plotbischtsche: the inhabitants, therefore, have to subsist almost entirely on the produce of the chase. As with the Laplanders, their food, clothing, and all their principal wants are supplied by the reindeer.

To them the two most interesting epochs of the year are the spring and autumn migrations of these animals. About the end of May they leave the forests, where they have found some degree of shelter from the winter cold, in large herds, and seek the northern plains nearer the sea, partly for the sake of the better pasture afforded by the moss tundras, and partly to fly from the moschetoes and other insects, which, literally speaking, torment them to death.

The hunting, however, at this season, is not nearly as important as in the autumn; it often happens that the rivers are still frozen over, affording no opportunity of intercepting the deer, and thus the hunters can only lie in wait for them among the ravines, to shoot them with guns or arrows. Success with the latter weapon is rather uncertain, while the high price of powder and ball is an objection to the use of guns, especially as the animals at this season are very thin, and their flesh is so injured by the insects that nothing but extreme hunger can render it palatable: those killed in spring are therefore commonly used only for the dogs. The true harvest, which we arrived just in time to see, is in August or September, when the reindeer are returning from the plains to the forests. They are then healthy and well fed, their flesh is excellent, and, as they have just acquired their winter coats, their fur is thick and warm. The difference in the quality of the skins at the two seasons is so great, that while an autumn skin is valued at five or six roubles, a spring one will fetch only one, or one and a half rouble

In good years the migrating body of reindeer consists of many thousands; and though they are divided into herds of two or three hundred each, yet these keep so near each other as to form but one immense column, which is sometimes from 50 to 100 wersts in breadth. They always follow the same route, and in crossing the river near Plotbischtsche, they choose a place where a dry valley leads down to the stream on one side, and a flat, sandy shore facilitates their landing on the other side. As each separate herd approaches the river, the animals composing it draw more closely together, and the largest and strongest takes the lead. He advances, closely followed by a few of the others, with head erect, and apparently intent on examining the locality. When he has satisfied himself, he enters the stream, the rest of the herd crowd after him, and in a few minutes the surface is covered with them.

It is at this moment that the hunters, who have been concealed to leeward, rush in their light canoes from their hiding-places, surround the animals, and obstruct their passage, while two or three chosen men, armed with short spears, dash in among them, and despatch large numbers in an incredibly short time; or, at least, so wound them that, if they reach the bank, it is only to fall into the hands of the women and children.

The office of the spearman, however, is a very dangerous one. It is no easy matter to keep his light boat afloat in the dense crowd of swimming animals, which, moreover, make considerable resistance, the males with their horns, teeth, and hind legs, while the females endeavour to overset it by getting their fore feet over the gunwale; and if they succeed in this, the hunter is almost certainly lost, for it is scarcely possible that he should extricate himself from the throng; but the skill of these people is so great that accidents very rarely occur. A good hunter will kill 100 or more in less than half

an hour. It often happens, when the herd is large and gets in disorder, that their antlers become entangled with each other, and then, being unable to defend themselves, they are still more easily despatched. Meanwhile the rest of the boats pick up the slain, and fasten them together with thongs, every one being allowed to retain what he secures in this manner. It might seem that in this way nothing would be left to requite the spearmen for their skill, and the danger they have encountered; but, while everything in the river is the property of whoever first lays hold of it, the wounded animals which reach the bank before they fall belong to the spearman who wounded them. The skill and experience of these men is such, that in the thickest of the conflict, when every energy is taxed to the utmost, and their life is every moment at stake, they have sufficient presence of mind to measure the force of their blows so as to kill the smallest animals outright, but only to wound the larger and finer ones, so that they may be just able to reach the bank. Such management, it may readily be conceived, is not sanctioned by the general voice, but it seems, nevertheless, to be almost always practised.

The whole scene is exciting, and curious in the highest degree, and quite indescribable. The throng of thousands of swimming reindeer, the loud clashing of their antlers, the swift canoes dashing in among them, the terror of the frightened animals, the perilous situation of the huntsmen, the shouts of warning or of applause from their friends, the blood-stained water—these and other accompaniments form, altogether, a spectacle which no one can picture to himself without having seen it.

After the chase is over and the spoils are distributed, the deer which have been killed are sunk in the river, the ice-cold water of which preserves them for several days, till there is time to prepare them for winter use. For this purpose the flesh is

either dried in the air or smoked, or, if early frosts set in, frozen. The Russians sometimes salt the best pieces. The tongues are considered the greatest delicacy, and are reserved for special occasions.*

We remained two weeks at Plotbischtsche, leaving it on the 13th of August, when the reindeer hunt was quite over, and arrived the same night at Argunowo, where we found a few families still awaiting the passage of these animals.

About twenty wersts above Argunowo, the Aniuj is joined from the north by the Poginden, a stream of nearly equal breadth. The reindeer pass the river as high up as this place, but not much beyond, as its course is then broken by waterfalls. There are no settlements on the Poginden, but in winter, when frozen, it affords a smooth and convenient road to the Jukahiri in their journey to the mountains and to the banks of the Beresowaja and Baranicha, where wild sheep abound.

At Argunowo the river-scenery became more pleasing: the dark rocks were succeeded by gently swelling and varied slopes, and the windings of the stream were checkered with small islands, studded with groups of poplar-trees, while a few inconsiderable herds of reindeer, which had lingered behind the main body, added animation to the scene. The rapidity of the current allowed us to advance only very slowly.

We passed the night of the 16th in a deep ravine between two rocky hills, one of which is named from an extensive enclosure into which the migrating reindeer are enticed by various devices. As the evening was clear, I ascended one of these hills, which I thought would command an extensive prospect, and afford me an opportunity of obtaining some angles; but I found the view shut in by dark

* Smoked reindeer tongues form a considerable article of commerce in Russia. They are much fatter and far more delicate than neat tongues.—*Am. Ed.*

rocks in almost every direction, and had to return without effecting my purpose. Next day we came in sight of the Obrom Rock, which was to form the termination of our journey: its summit was veiled in clouds. We passed the fort of Ostrownoje, and arrived on the evening of the 17th at the summer village of Obromsk, where we found only women and children, the men not having yet returned from the reindeer hunt.

Dr. Kyber wished to remain here a few days, during which I wandered about the country with my dogs and gun.

A Jukahir accompanied me as a guide up the Obrom Rock: the path we took was rugged and dangerous, but the view from the snow-clad summit amply repaid me. To the north were undulating snowy mountains, which lost themselves in the blue ice and the haze of the frozen sea, while the dark-red beams of the setting sun, heralds of an approaching storm, gilded their summits, and, reflected by the particles of ice which filled the air, formed innumerable rainbows: here and there dark rocks rose from the mist like islands in the ocean. There are features peculiar to the icy regions of the Polar Circle which cannot be conveyed by description, but which challenge our admiration no less than the smiling beauty of more favoured climes. While I was contemplating the picture before me, the deathlike stillness which prevailed was suddenly broken by violent gusts of wind howling and sweeping through the ravines, and whirling up high columns of snow and sand: my guide urged our speedy return by an easier path than we had followed in the morning, and on which the side of the mountain would afford us some protection from the storm.

The Obrom is wooded half way up: fine larch-trees grow near the foot; these are succeeded by shrubs of the same species; and higher up the ground is covered by the creeping cedar, success-

ively followed by coarse grass and moss. The rock itself is of granite, naked, and scathed by the weather, though with occasional patches of vegetable earth.

The season of storms had now set in; the few deciduous trees were stripped of their leaves; the north sides of the hills were covered with snow; and broad margins of ice began to form along the river.

On the 21st of August we commenced our return, and, aided by a favourable wind, descended the stream at five knots an hour, reaching Plotbischtsche the evening of the second day. Here we were greeted from both sides of the river with the cheerful songs of the successful hunters, and saw the banks everywhere lined with the numerous reindeer which had been killed; they were placed under water, and covered with branches: we shouted our hearty congratulations, and passed on without stopping.

From Plotbischtsche to Obrom the navigation is rendered difficult and hazardous by numerous islands, rocks, and sandbanks, and higher up the river is altogether unnavigable. The Aniuj, being a mountain-stream, is subject to sudden and violent floods. It every year carries away islands and forms new ones, and sometimes alters its course for several wersts; while the shallows and rapids shift their places so frequently, that even the people living on its banks do not profess to know them.

THE GREATER ANIUJ.

Journey continued on Horseback.—The Mountain-Chain of the Greater Aniuj.—The Kameschkowa.—Fur-Hunting.—Traps.—Tigischka.—Arrival at Sladnoje and Lebasnoje.—The Emperor's Name-day.—Failure of the Reindeer Hunt.—Famine.—Return by Water.—Inhabitants of the Banks of the Greater Aniuj.—Tunguși, Lamuti, Tschuwanzi, and Jakuti.—Their Modes of Life, and Numbers.—Schamanism and Schamana.—Dolgoje.—Arrival at Bol'schaja Brussanka.—Freezing of the River.—Continuation of the Journey in Sledges drawn by Dogs.—Baskowo.—Arrival at Nishne Kolymsk.—Remarks on the Different Tribes whom we visited during this Journey.

Our journey from Plotbischtsche was to be continued on horseback, but as the six horses we required were not ready, we could not take our departure before the 25th of August. The continuance of violent winds and heavy snowstorms, added to the great morasses (*badarany*) which we had to pass, rendered the land-travelling far from agreeable. Thirty wersts along a narrow footpath brought us to the naked summit of the elevated ridge which divides the two rivers Aniuj from each other. We were here greeted by an inhabitant of the mountain in the shape of a huge black bear, which sprang suddenly upon us from the wood: our horses were terrified, but the bear was no less so, and disappeared in the thicket before we had time to level our guns. Such encounters are very frequent in this part of the country, but the formidable brutes are not always so harmless. Two of these animals attacked a Lamutian hut at night, when the family were asleep, and destroyed them all except one man, who succeeded in making his escape.

We pitched our tent for the night about three wersts from the foot of the mountain, on the banks of the Kameschkowa, which falls into the great Aniuj near Patistennoj. It was not very late, and, as numerous tracks of sables were visible on the new-

fallen snow, I walked a little way with my gun in hopes of killing some. My inexperience in this kind of chase was probably the reason why I did not even get sight of a single sable; however, I shot several ptarmigan, which afforded a very welcome addition to our supper.

On the banks of both the greater and the lesser Aniuj there are an immense number of traps and snares of all kinds, for catching sables, ermines, gray squirrels, wolverines, and foxes, which still abound, notwithstanding all the arts resorted to for their destruction. From two to three hundred sables are often taken in the course of the autumn. An industrious Jukahir usually sets about five hundred different traps when the first snow falls. He visits them five or six times in the course of the winter, and in a good year he commonly finds one prize in every eighth or tenth trap.

There are a great variety of these traps, all made of wood, without any iron, and with no other tool than a hatchet, and which show remarkable ingenuity and mechanical skill. They are so perfectly adapted to the peculiar habits, mode of running, and degree of strength of the different animals they are designed to catch, that it would seem impossible to make any farther improvement on them. That great practical teacher, necessity, has led the Jukahiri to exercise to the utmost their inventive faculties on the only branch of industry by which they can earn money, and they have attained a high degree of perfection in the art, both as respects the contrivances for ensnaring the fur-animals, and in the training of the dogs and reindeer employed in the chase.

On the night of the 26th of August we reached the little settlement of Tigischka on the banks of the greater Aniuj, but found no one there except two half-starved women. As Dr. Kyber was ill, and unable to continue the journey on horseback, we were obliged

to halt, and to send one of our people to Sladkoje, where a great number of persons were assembled for the reindeer hunt, and where, therefore, we hoped to be able to obtain a good-sized boat. The next day the boat arrived; but it was so narrow that it was impossible to stow ourselves and our luggage in it. We therefore agreed that Dr. Kyber should embark by himself, and that I should ride along the river-side as far as Lobasnoje, where we hoped to find a larger *karbass*, in which we might both proceed, according to our original plan, as far as the mouth of the Angarka, where there was formerly a small fort, and where the Tschuktschi were in the habit of resorting every year for barter.

On the 28th of August I resumed my journey: the ground was covered with snow, and we had to make our way through thickets and across streams and morasses. High wind and falling snow continued throughout the day, and we were glad to take shelter for the night under the steep bank of the River Vetrenowka. The woods through which we had been travelling were much finer than those of the lesser Aniuj. We saw, besides larch, a quantity of well-grown birches, poplars, willows, aspens, and other species of trees. On our way we passed several old burying-places of the earlier inhabitants, which were little wooden buildings resembling the *sajby*, or places for depositing provisions. The corpses were clothed, and armed with bows, arrows, and spears, and those of the *schamans* had their magic drum in their hand. At some little distance from our path we saw an old wooden building resembling a kind of fortification, made of boards, and which appeared to have been formed by the aid of stone hatchets. The bad weather, the deep snow, and the lateness of the hour did not admit of a closer examination.

The Vetrenowka has many windings, and its banks are steep and rocky. The hollows between

the hills and rocks are covered almost everywhere with angular fragments of stone, which have not yet been rounded by the action of the water. Both here, and on the lesser or dry Aniuj, I frequently met with slate with veins of spar, and occasionally with cornelian and quartz, the former in very small pieces, and the latter in rather large masses. I also found here a mammoth's jaw-bone in tolerably good preservation.

After a rather uncomfortable night, we resumed our journey the next morning. It had struck me several times the day before that the guide was not altogether well acquainted with the way; and on seeing him to-day turn sometimes in one direction and sometimes in another, without any apparent reason, I expressed to him my doubts as to his knowledge of the country. He stoutly maintained, however, that he had often been here before, and to prove it, he ran over the names of the different hills and streams which we had passed. Meanwhile night came on, and we were still wandering through rugged and desert ravines, our horses almost exhausted, when at last the guide acknowledged that he did not know in what direction to look for the Aniuj. I had now to seek a way out of the wilderness as well as I could. My own opinion was, that the river lay to the westward, and, not having any compass, I directed my course to that quarter by the bark of the larch-trees, which throughout Northern Siberia is black on the north, and red on the south side of the tree. The fur-hunters often thread their way by it through the trackless forests.

We shortly came to a stream which we supposed flowed into the Aniuj, and, as the darkness rendered the mountain-paths both difficult and dangerous, I determined on following its course; it gradually became larger, and assumed a northwest direction. After proceeding twenty wersts, we heard to our great joy the rushing sound of the swollen river,

dashing over the rocks and stones which interrupted its course. We soon reached its banks, and found that, after having wandered a long way from our road, we had come out opposite to the village of Sladkoje. Here we sheltered ourselves from the wind and snow in a half-ruined *balagan* which stood near the river.

Our fire attracted the notice of the Jukahiri on the opposite bank, and some of them came across to us, gave us fresh reindeer meat, and told us that Dr. Kyber had arrived in the course of the day. As our horses were completely jaded and unfit to continue the journey, I determined to leave most of our things here under the care of our Jukahir, and to cross over to Sladkoje in a little boat. The next day Dr. Kyber and I proceeded in a *karbass*, and after a passage of seven hours, which was rendered dangerous by the high wind and the force of the waves, we arrived on the 30th of August at Lobasnoje, where a large number of reindeer are usually taken at this season. We heard several shots fired, and, as we approached nearer, we were greeted by the sound of songs. We were met on the landing by two Jukahir chiefs, who told us that they were celebrating the name-day* of the emperor, or, as he is here called, the White or Free Czar, the Son of the Sun. We joined them, and distributed tobacco and brandy, which added to the general hilarity. The men displayed their skill in shooting at a mark with bows and arrows and with guns; they had also footraces and boatraces, the women sang and danced, and the rejoicings continued till daybreak. Doubtless the day was celebrated in a far more brilliant manner in many parts of the empire, but it may be doubted if it was kept anywhere with more

* It is customary in Russia to celebrate the name-day, that is, the annual return of the day on which an individual received his name in baptism, as well as his birthday.—*Am. Ed.*

cordiality and cheerfulness than at this obscure village, 12,000 wersts from the imperial residence.

We found that a great number of sick people had collected here to await our arrival, and Dr. Kyber decided on staying a fortnight on their account. As there were several surgical operations to be performed, he was fully occupied; but the uninterrupted bad weather, with thick-falling snow, confined me almost the whole time in irksome inactivity. It was hardly possible to make a single excursion in the neighbourhood, and I had to consider myself fortunate in getting one meridian altitude.

The inhabitants say that they find different kinds of crystals, chalcedony, and cornelian in the mountains, and at the mouth of the river flints of an unusual size, marked with impressions of plants and shells. In a high cliff of black slate near the little river Sladkoje, which we followed to the Aniuj, there is a whitish earth, which has a sweetish and rather astringent taste, and to which the Jukahiri ascribe a variety of sanatory properties.

The district of the greater Aniuj must be more interesting than that of the lesser, both on account of its denser population, and of the greater variety of plants and animals. We were therefore the more disappointed at the state of the weather, which almost precluded us from making any observations for ourselves, and obliged us to be contented with such imperfect and uncertain notices as we could glean from the inhabitants.

The migratory reindeer had not yet passed the river at this place, and their arrival was expected with the utmost anxiety, as scarcity was already severely felt. It is not easy to imagine the fearful extreme which famine sometimes reaches among a people whose whole support depends on a single precarious incident. It often happens that many among them have to subsist during the latter part of summer almost entirely on the skins which form

their bedding and clothing; and if, happily, a single reindeer is killed, it is immediately cut up, divided among the whole tribe, and literally eaten skin and all, the hair being just singed off: the contents of the stomach, and even the horns, are used for food. Fish are not caught till later in the year, and even then only in small numbers, and few of the inhabitants venture to go off to the *tundras* in quest of game, for fear of missing the passage of the reindeer, on which their support so essentially depends.

On the 12th of September the famishing inhabitants were filled with joy at the sight of immense numbers of reindeer approaching the right bank of the river opposite to Lobasnoje. I never saw such a multitude of these animals. At a distance their antlers resembled a moving forest. The hunters flocked in from every side, and hope beamed on every countenance as they arranged themselves in their light boats to await the passage of the deer. But whether the animals had seen and were terrified at the crowds of people, or whatever the reason may have been, after a short pause they turned, left the bank, and disappeared among the mountains. The utter despair of the poor starving people was dreadful to witness. It manifested itself among these rude children of nature in various forms. Some wept aloud and wrung their hands; some threw themselves on the ground, and tore up the snow; others, and among them the more aged, stood silent and motionless, gazing with fixed and tearless eyes in the direction where their hopes had vanished. Feeling our inability to offer the smallest alleviation to their misery, we hastened to quit this scene of wo, and resumed our voyage on the 30th, notwithstanding a violent contrary wind. Being favoured by the current, we reached Sladkoje the same night, and Dolgoje the following day.

Throughout the entire distance of about eighty wersts, the river flows along the foot of an uninter-

rupted mountain ridge, from which bluff rocks occasionally project, and overhang the bed of the stream. These rocks consist partly of light gray granite and partly of black slate, between which are thin layers of ochre. The inhabitants were now having recourse to the fisheries as their only remaining, though wholly inadequate resource. Still, the fisheries on this river, if not very productive, are usually far more so than those of the lesser Aniuj, as the former stream, though not so wide, is much deeper and less rapid than the latter; and, consequently, the fish go higher up, and in larger quantities. But in the present year of distress even this last hope failed; only a few fish, and those small ones, were taken; while more frequently the nets and baskets came up empty. The fowling season was over, general famine appeared inevitable, and no doubt hundreds of the scanty population perished, as had been repeatedly the case in former years. The improvident and careless habits of the people, the great distances between their settlements, and the generally desert state of the country, combine to make it impossible for the government or its officers to effect any amelioration in their wretched condition. Most of these tribes were formerly nomades, ranging with their tame reindeer far and wide through the *tundras* in search of the best pasture. After the conquest of Siberia they were subjected to tribute, and were restricted to a limited circle, within which they were often unable to find sufficient food for their herds.* The consequence of this restriction has been the gradual loss of those animals, partly for want of pasture and partly from

* A few Jukahiri and Tschuwanzi, under the conduct of a chief named Tschaja, still retain their nomade mode of life. They are distinguished from their countrymen by a more powerful frame of body, by the tents which form their habitations, and by their clothing, which resembles that worn by the Tschuktschi, as does that of all the reindeer-nomades of Siberia.

sickness, which, when it broke out in a single herd, spread rapidly among the rest, as they could no longer be withdrawn at once to escape the contagion. The people gradually adopted many of the customs of their Russian conquerors, in the form of their habitations, in their dress, and in the employment of dogs* instead of reindeer for draught; but they have retained that recklessness as to the future which characterizes all the nomade races. As Russian subjects, they were placed at enmity with the Koraki and Tschuktschi, who are their nearest neighbours, and many destructive encounters have taken place between them.

Attachment to the land of their birth, and ignorance of the countries beyond the Kolyma, have combined to prevent them from spreading towards the west, and to confine them to a district where their very existence depends on success in intercepting the wild reindeer in their annual migrations. Thus hunger, wars, and contagious diseases, which assume here a highly-malignant type, have conspired to reduce the population. An old chief told me that some time ago the Tschuwanzi requested permission to remove to the uninhabited and fruitful districts along the Anadyr and the Penshen, but that the commissioners of the Kolymsk district had hitherto successfully opposed the granting of this petition, lest they should lose a large part of the advantages which they derived from the fur-trade with that people.†

* The custom of using dogs as draught animals came no doubt originally from the Kamtschatdales, from whom the Russians adopted it. All the nations of northeastern Siberia were previously in the habit of employing reindeer for this purpose exclusively. The reindeer is useful to his master in many more ways than the dog, but, on the other hand, he is more difficult to maintain.

† There can be little doubt, we think, from the account here given, notwithstanding the guarded language of the writer, that the miseries of these poor people are for the most part occasion-

The Tschuwanzi and Jukahiri of the greater Aniuj, from having had far less intercourse with the Russians than has been the case with the dwellers on the banks of the lesser Aniuj, have retained much more of their original language, manners, and customs. The Lamuti and Tungusi along these two rivers have also lost their tame reindeer, and now live poorly on the uncertain produce of the chase and the fisheries. Nor are those Jakuti much better off, who have been brought by the government from the banks of the Aldan, to aid in transporting provisions and other stores to the fort which formerly existed on the Anadyr. Separated from the rest of their countrymen, they have forgotten even their language, and have assimilated to the Russians in manners, mode of life, and even physical appearance. They live almost exclusively by fishing, and their only domestic animals are the dogs which they use for draught.

The population on the banks of the Aniuj has increased latterly, but this cannot be regarded as a sign of improvement in the condition of the people. It is caused by the influx of different nomade tribes, who, having lost their reindeer by sickness or other causes, have been forced to seek their subsistence in the neighbourhood of the rivers, like the rest of their countrymen. The number of persons in this district who still continue to lead a nomade life does not exceed 400. All the inhabitants are subject to a yearly tribute, which they pay partly in furs and partly in money.

They have all been baptized, and conform to the usages of the Russian Church at least once a year, when the different settlements are visited by the priest of Nishne Kolymsk, for the purpose of solemnizing marriages, christenings, and burials, and of administering the Lord's Supper. The journey is a very difficult and laborious one, as it includes a cir-

ed by the mercenary and inhuman policy of their Russian masters.—*Am. Ed.*

cuit of many hundred wersts, at the worst season of the year, and in a wild and desert country. It is, however, a very advantageous journey to the priest in a pecuniary point of view, from the number of presents which he receives; it being not uncommon for him to return with two or three sledges laden with the most costly furs, as sables, ermines, foxes, &c.

Pagan superstitions have been a good deal checked by the introduction of Christianity, but the belief in the power both of good and evil spirits, and of the *schamans*, still keeps its ground, and, singularly enough, has extended itself to the Russians. I have even been assured, that a priest who was about to undertake a journey to Irkuzk applied to a *schaman* to afford him protection by his art against any accidents on the road! Generally speaking, however, *Schamanism* has lost its religious character. With the Russians it is for the most part merely a mode of passing away the time, and they send for a *schaman* to occupy an evening in the practice of his tricks, just as in Europe people send for a conjuror.

But to return to our journey. The cold increased daily. The ice extended farther from the margin of the river, and we came to places where the current was less rapid, which were completely frozen over, so that we were obliged to open a passage with our hatchets and poles. We hastened our voyage as much as possible, that we might arrive at some place where we could procure sledges before the river was entirely closed. With great difficulty we reached Bolschaja Brussanka, where we were received at the summer dwelling of a Jakutian *knasez* or chief; and here we had to wait till the stream should be completely frozen and the winter road established.

During our stay the cold seldom exceeded +9°, and the temperature of the water changed but very gradually.

In the Aniuj, as well as in all the more rapid and rocky streams of this district, the formation of ice takes place in two different ways: a thin crust spreads itself along the banks and over the smaller bays where the current is least rapid, but the greater part is formed in the hollows among the stones, in the bed of the river, where the weeds give it the appearance of a greenish mud. As soon as a piece of ice of this kind attains a certain size, it is detached from the ground, and raised to the surface by the greater specific gravity of the water: these masses, containing a quantity of gravel and weeds, unite and consolidate, and in a few hours the river becomes passable in sledges instead of boats.

On the 24th of September everything was ready for resuming our journey in sledges. The dogs were weak from being scantily fed, and we could drive but slowly, so that we did not reach the Jakutian settlement of Potistennoje until the 28th. This name, signifying five-cornered or five-walled, is taken from a large insulated rock, which in its five perpendicular sides of equal dimensions bears a striking resemblance to a five-cornered tower. Here we obtained fresh dogs, and drove the same day to a village called Baskowo, where we found a few Russian families who had not yet returned to Nishne Kolymsk. From Brussanka to Baskowo the banks of the stream are generally flat, with a few occasional sandhills, which are constantly being undermined by the water. The whole district is a morass, interspersed with small lakes, and here and there are low bushes and stunted larch-trees; a few taller trees are also seen in places where the ground is a little raised. There is no part of it but is singularly dreary and uninteresting; we were five days in travelling through it, and on the 29th of September we were gladdened by the sight of Nishne Kolymsk again, after an absence of seventy days. The nature of the country and the lateness of the sea-

son rendered the latter part of our journey almost wholly devoid of interest.

It may be said of the inhabitants generally, that, notwithstanding the influence of the Russians, they still preserve, in a great measure, their original characteristics, both in their physical appearance and disposition. Like most of the natives of the Polar Circle, they are of short stature, but broad-shouldered and muscular. Their hands and feet are very small, their heads large in proportion to their bodies, the face is broad and flat, and the wide cheeks appear to press the mouth together and give it a roundish form. Their hair is black and coarse, and their small deep-seated eyes are dull and inanimate. Their whole outward form seems contracted by the severity of the climate, and the constant struggle with cold and hunger; and from the same causes, their moral and intellectual faculties are but imperfectly developed.

CHAPTER X.

Third Journey on the Ice of the Polar Sea.—Preparations.—Mortality among the Dogs.—Departure from Nishne Kolymsk.—Journey towards the North.—Waves of Drifted Snow.—Encounters with White Bears.—Deposite of Provisions.—Difficulties.—Accident.—High Hummocks.—Second Deposite of Provisions.—The Expedition Divided.—False Appearances of Land.—Return to the Deposites of Provisions.—The Expedition Reunited.—Proceed Northward again.—Easter.—Breaking up of the Ice.—Hummocks.—Turn to the Eastward.—State of the Ice.—Cape Schelagskoj.—Arrival at the First Deposite of Provisions.—Return to the Coast.—Pochodsk.—Famine.—Arrival at Nishne Kolymsk.—Inundation.

THE short summer of 1821, which to the inhabitants of Nishne Kolymsk had been marked by so disastrous a failure in the produce both of the fish-

eries and the chase, was succeeded by a long winter of suffering. Our own position was a painful one, unable, as we were, in any measure to relieve the general distress. To the want of provisions was added a new misfortune, hitherto almost unknown in this district, namely, a widespread malady among the dogs. This disease had shown itself during the summer on the banks of the Lena, the Jana, and the Indigirka; and very soon after the beginning of winter it reached the banks of the Kolyma. As our intended journey over the ice depended on our having the ninety-six dogs required for eight sledges, I sought anxiously to adopt such precautions as might secure those we obtained from infection. Orders were given to procure as quickly as possible at least a hundred healthy dogs, and to take them immediately to the greater and lesser Tschukotschje Rivers, to be kept there at the expense of the expedition, cutting off all communication with the neighbouring district. Part of our provisions had also to be conveyed to the storehouse which had been built near the Baranicha River. But while we were endeavouring to execute these plans, the malady spread so rapidly that we had the utmost difficulty in procuring thirty-six dogs instead of the required ninety-six; and though they were instantly sent away, they almost all died. The mortality increased daily with the increasing intensity of the cold, and it soon extended to all the villages and settlements in the Kolymsk district. The inhabitants felt the loss of these valuable and almost indispensable servants more acutely than they did the scarcity, to occasional returns of which they are accustomed, and in a great measure resigned. Such was the unhappy state of things at the opening of the new year. As the time of our departure was near, I gave up all hopes of obtaining any more dogs in our own district, and sent one of the most trustworthy of the Cossacks to the Indigirka, where the sickness had

not reached, with a commission to purchase sixty, and to keep them in readiness until farther orders near the greater Tschukotschje River, feeding them well. On the 5th of March I received information from him that he had found it impossible to collect more than forty-five good dogs, and that with these he was waiting for me at the appointed place.

As the intensity of the cold diminished, the sickness gradually abated, until at last it entirely disappeared, but not until the inhabitants had lost four fifths of their dogs. Most of those which had survived were the property of the Cossacks, who, on seeing the difficulty in which I was involved relative to the journey which it was my duty to make, came forward of their own accord, and, in conjunction with some of the citizens, most generously volunteered to fit out twenty sledges with twelve dogs each. We had now nearly three hundred, including those at the Tschukotschje River, but there were not more than sixty among them that we could depend upon for a distant journey: the rest were all so weak as to be almost wholly unserviceable. I was obliged, therefore, materially to alter my original plan, which had been to form the expedition into two divisions. This was necessarily given up, as well as the intention of beginning our journey over the ice from the mouth of the great Baranicha, where a large hut and a storehouse had been constructed, as before mentioned. The latter was empty, as it had been barely possible, for want of dogs, to convey provisions as far as Sucharnoje.

Everything was at length ready for our departure, the sledges being loaded with dried and frozen fish and other necessaries, and we left Nishne Kolymsk on the 10th of March. My companions were MM. Matiuschkin and Kosmin, and the sailor Nechoroschkow. Dr. Kyber was bent on accompanying us, notwithstanding his weak state of health, and actually set off with us; but, in spite of all his efforts, he

found himself obliged to return from Sucharnoje on the 14th.

We had only five proper travelling-sledges, with teams of dogs fit for the whole journey; the remaining nineteen carried provisions, and were to return as soon as empty. One of our drivers was to serve as interpreter to the Tschuktschi.

We reached Sucharnoje on the 12th of March, and spent the 13th in making necessary preparations. We took provisions for ourselves for forty days, and for the dogs for thirty-five days, and began our journey over the ice on the 14th. On the 15th we reached the greater Baranow Rock, where we took up as much driftwood as we could add to our loads. Unluckily, we found only larch, which is heavy in carriage, and burns quickly. Having been made aware of this on our previous journeys, I had directed a supply of birch-wood to be brought from the two Aniuj rivers to Nishne Kolymsk, and dried to make it lighter. We had enough of this for fifteen days' consumption, besides four pood of train oil, which would serve for ten days more; and altogether a stock of fuel for nearly forty days, though our sledges were rather heavily loaded.

On the 16th we drove northward, with a strong breeze from the east, dark weather and snow. The north and northwest sides of the greater Baranow Rock, which are washed by the waves, consist of perpendicular masses of slate six fathoms in height, and occasionally broken by a few ravines. After proceeding eight wersts, we found ourselves at the most northern point of the rock, where a few insulated pillars present the appearance of a ruined castle.

From this point we took our course straight across the sea, in a N. 30° E. direction. It appeared to me that the object of our journey would be best answered by proceeding to the N.E., until we should come to 71½° lat., in the meridian of Cape Schelagskoj, and 150 wersts distant from that promontory. I

there proposed to form a deposite of provisions, to send back the empty sledges, and with the remainder to pursue my researches to the east, north, and northwest. In this manner our present journey would form a continuation of that of the preceding year, and we might hope for a satisfactory conclusion in respect to the existence or non-existence of the problematical northern land.

About one werst and a half from the shore we came to a considerable group of irregular hummocks, and, after driving among them for eighteen wersts, we halted; not that we required rest, but in order to repair two of the travelling-sledges which had been injured, and to wait for the provision-sledges, which did not come up till late in the night, and then in a very bad condition. They had been so much damaged in passing the hummocks, that we were obliged to expend a large part of our store of birch-wood in mending them. This unsatisfactory work occupied us during the whole of the following day, and we could not resume our journey until 11 o'clock on the 18th. We had heavy snow, a cutting N.W. wind, and a temperature of +2°. The hummocks diminished in size and number, and at last ceased altogether; but in their stead we found a large plain crossed by immense waves or ridges of snow, and though the sledges suffered here much less than among the hummocks, our dogs were wearied by having continually to ascend and descend. The height of these ridges, which was two fathoms and upward, showed that a vast quantity of snow must have fallen, and that east winds had chiefly prevailed.

By our noon observation we were in 69° 56′ latitude, and our longitude by reckoning was 0° 14′ east of the greater Baranow Rock. Our day's march on the 18th was only twenty-three wersts, chiefly from the delays occasioned by the provision-sledges. As some compensation for this, however, we succeeded in killing a large white bear, whose flesh was

very acceptable to the dogs. In the night the temperature fell to —24°, and continued the same throughout the 19th; but there being very little wind, it was endurable. Towards noon the weather cleared, and we saw the greater Baranow, distant forty wersts, bearing S. 11° W.

The next day we accomplished eighteen wersts between 9 A.M. and noon. Our observation made the latitude 70° 12′, and the longitude by reckoning was 0° 50′ E. of the greater Baranow Rock. After completing thirty-six wersts, we were obliged to halt earlier than usual, on account of the violent N.W. wind and thick drifting snow. Our sixteen provision-sledges (we had emptied and sent back three) were, as usual, behind, and it was not till late at night that fourteen of them came in, the drivers being unable to tell us anything of the two that were still missing. My uneasiness at this circumstance was increased by knowing that a number of white bears were roaming about: one had even broke into our camp in the course of the night, but was immediately killed. As soon as day dawned we were on the look-out for the missing sledges: happily, they at length arrived, the drivers informing us that they had lost sight of their companions in the thick snow-drift, and had been obliged to halt where they were; that they had suffered much from the severity of the cold, having neither fire nor food, and had passed the night in constant fear of the bears, which had probably been deterred from attacking them only by their shouts and by the barking of their dogs. We deposited part of our provisions in the ice at this place, and sent back three more empty sledges.

The N.W. wind became still more violent, and the snowdrift thicker, the thermometer standing at —9°. But, notwithstanding the badness of the day, we were able to get an observation at noon, which made our latitude 70° 19′; our longitude by reckoning was 1° 6′ E. of the greater Baranow Rock.

On the 21st the wind abated and veered to the east, but the sky was still overcast, and the thermometer showed —11°. At 10 A.M. we resumed our route to the northeast among hummocks: our noon observation gave 70° 26′ latitude, and we were 1° 22′ east of the Baranow. In the afternoon we killed a bear that had followed us, and had wounded three of our best dogs. Some of the sledge-drivers had become so dissatisfied with their meager fare that they determined to try some slices of the bear's meat, notwithstanding the aversion universally entertained for it in the country. They assured us that they found it very palatable. At night we had a violent east wind, with a temperature of —24°.

On the 22d of March we started again, after repairing our sledges, which had been damaged among the hummocks, our latitude being at noon 70° 39′, and the longitude by reckoning 1° 51′ east of the greater Baranow. By our portable azimuth compass the variation was 14½° E. The deep snow and large hummocks impeded us so much that we made only fourteen wersts before nightfall, when the wind and snowdrift became more and more violent, and the provision-sledges, which did not arrive until six hours later, probably owed their safety to the drivers having attended strictly to the orders which had been given them, to keep close together, so as to be able to assist each other.

On the 23d, to our great joy, we had the kind of warm wind mentioned in a previous chapter, with a clear sky, and the thermometer at +35°. We hastened, therefore, to avail ourselves of so favourable a change, by drying our tent, harness, bedding, and clothes of every description.

Meanwhile M. Matiuschkin went forward with two sledges to examine whether the difficulties towards the northeast became any less. He reported that, on the contrary, the hummocks increased both in size and number, but that there appeared to be an

opening to the west, and we accordingly proceeded in that direction: our noon latitude was 70° 42′, and our longitude 1° 51′ E. by reckoning. We soon came again to bad hummocks, among which we met with continual accidents; the traces of my sledge broke just as it had attained the summit of one of the highest hummocks, and the dogs flew down the steep declivity, leaving the vehicle and myself at the top. Unluckily, too, at the foot of the hill they came upon a fresh bear's track, and followed it, notwithstanding our cries, until they were stopped by the broken traces which they dragged after them becoming entangled in some blocks of ice. But for this fortunate occurrence we should probably have lost them altogether, and been subjected to great difficulties in consequence of it; after a long chase, we found them four wersts from the place where they had left the sledge, and quite exhausted by the efforts they had made to free themselves.

Though we had advanced but six wersts, we were forced to halt under the shelter of a large block of ice. A long range of elevated hummocks extended to the S.E.; our provision-sledges were, as usual, much behind, and it took them ten hours to get over the six wersts. The wind blew strong from the S.W. during the night, but abated towards morning. We started early on the 24th, with a clouded sky and a temperature of +7°. About noon snow began to fall, and our difficulties this day were greater than ever: we had to break our way with crowbars across higher and more rugged hummocks than any we had before met with. The ice of which they were formed was very solid, and had a knotty appearance, and they were covered in many places with blue clay and gravel. In spite of the greatest care, the sledges were frequently overset, sometimes sliding down the slippery declivities and being precipitated into the narrow ravines, from which we extricated them with the greatest difficulty. The efforts of

both men and dogs were taxed to the utmost, and all of us were more or less hurt by falls. As the provision-sledges had suffered the most, and constantly caused great delay, I determined to send them home from this place, and to deposite in the ice the provisions which they carried. We excavated receptacles for these with great care, and closed them up with thick blocks of ice, filling up all the crevices with snow, and pouring water over the whole, so as to form it into a solid mass, that it might not be disturbed by the bears. When this was done we proceeded to mend the sledges, which stood greatly in need of it; but the joy of the drivers at being permitted to return home was so great, that, fatigued as they were, they sung over their work, which they completed with extraordinary despatch.

The 25th was spent in this labour. Towards evening the horizon cleared a little, and we saw two mountain-like elevations: one, which bore S. 19° W., I considered to be the greater Baranow Rock, distant by reckoning 130 wersts; the other bore S. 5° W.; but whether they were really mountains I could not be sure. On determining our position by the bearing of the one supposed to be the Baranow Rock, it was found to agree with our reckoning, and it appeared that we were thirty wersts to the east of the most eastern point of our last ice-journey.

On the morning of the 26th, the thirteen empty sledges started on their return to Nishne Kolymsk. I had sent M. Matiuschkin the day before, with two sledges and provisions for five days, to seek a route by which we might penetrate to the northeast, and I now proceeded northward with M. Kosmin, taking three sledges and provisions for three days. As it had been arranged that we should all meet here again on the 29th, the large tent was left on the spot till our return. We took at first a N.W. direction, in which the hummocks were smaller and less con-

tiguous. After advancing fourteen wersts, our noon observation gave the latitude 70° 52′, and the longitude was 1° 56′ E. of the Baranow Rock by reckoning. The old hummocks gradually diminished in number, and farther to the north we came upon another group, consisting of more recent ice: these had been formed by the packing of driftice in the winter, and were distinguished by a greenish-blue colour.

We found here a strip of ice bare of snow, running along the margin of a new fissure, in a W.N.W. direction. Having driven five wersts on this smooth pathway, we were astonished at falling in with old sledge-tracks, which, on examination, we recognised as those of our journey the preceding winter. As by our reckoning we were thirty-five wersts from our last year's route, it is probable that the N.W. wind, which prevails throughout the summer, had caused the whole field to drift thus far to the eastward.

This day we accomplished fifty-one wersts, among recent hummocks, meeting occasionally with a few old ones, the sides of many of which were partially covered with gravel and sand: the evening and night were clear, the temperature —13°, with a gentle breeze from the S.E., and we had hummocks around us on every side.

On the 27th, our latitude at noon was 71° 13′, our longitude by reckoning 2° 13′ E. of the greater Baranow Rock; variation 15° E. While taking our observation, M. Kosmin thought that from the summit of one of the highest hummocks he could see two hills to the northeast. Our attention being directed to them, they appeared clearly like two dark-blue mountainous hills, sometimes visible and sometimes obscured, the highest of the two bearing N. 40° E. Opinions were divided in regard to them; M. Kosmin and myself considered them as land, but our sledge-drivers looked upon it all as one of those op-

tical illusions which have been already spoken of. We drove on in a N. 40° E. direction, and when we had gone about a werst, we came to a piece of nearly rotten wood imbedded in the ice. The farther we advanced the clearer our hills appeared, presenting now the aspect of a hilly country of moderate elevation, at no great distance from us. We could plainly distinguish, as we supposed, the valleys between the different eminences, and even several single rocks; everything, in short, confirmed us in the hope of having reached at length the long-sought-for land, the object of all our toils. We hastened forward, therefore, amid mutual congratulations; but, as the evening light set in, we all at once saw our newly-discovered terra firma move 40° to windward, and extend itself along the horizon, until we appeared to be in a lake quite surrounded by mountains.

We halted for the night, full of disappointment, after a day's journey of forty wersts; we had a sharp E.N.E. wind, with a temperature of —4°. The next day, the 28th, the same illusion was repeated.*

* These illusions appear to be of every form and variety in the Polar Regions, and some of them exceedingly striking and beautiful, as the following, seen by M. Kosmin during his journey along the coast the previous year. "The warm weather," he says, "of the last three days (July 14th to 17th) might well have made us forget the latitude (70° 57′), if the fields of ice which covered the sea, and the perpetually-frozen ground beneath our feet, had not reminded us of it. Three days before we could not lay aside our thick winter garments, and now the lightest clothing seemed too warm. The sun had been constantly shining for the last seventy-two hours in a clear and cloudless sky. This was the last day that we saw it in its full magnificence, heightened by the refraction which the great evaporation from the sea produced. The size of its disk, its altitude, and its light appeared to vary incessantly. One moment it seemed to contract, to assume an elliptical form, and to sink into the ocean; it would then suddenly rise again in full size and majesty, and float above the horizon in a flood of red or yellow light. This magnificent spectacle lasted throughout the day, nor could we

After going eleven wersts and a half in a N.N.W. direction, we found our latitude at noon to be 71° 34′, our longitude 2° 50′ E. of the greater Baranow Rock by reckoning, variation 17° E. The hummocks did not appear to diminish, and it was now time to return to the spot where we were to meet M. Matiuschkin. We travelled faster in returning, partly because the dogs always run better and more rapidly over a track with which they are acquainted, and partly from some of the worst places having been smoothed in our previous passage: we made fifty wersts before sunset.

On the 29th, an easterly breeze rendered the atmosphere damp, and the thermometer stood at +12°. We saw several tracks of bears, and of their parasites, the stone-foxes. Late in the evening we reached the place where we had deposited our provisions, and found M. Matiuschkin awaiting us. He had made ninety wersts in a N.E. direction in three days, and had reached 71° 10′ latitude in the meridian of Sand Cape, having met with fewer obstacles than before; still he had encountered many difficulties, particularly from the great quantity of deep snow, in which the dogs and sledges were sometimes completely buried. He, too, had been deceived by the appearance of land on the horizon: besides tracks of stone-foxes, he had seen that of a red fox, a singular circumstance at such a distance from land.

The driver who was to serve us as interpreter if we should meet with any of the Tschuktschi, was attacked with violent cramps in the stomach. Fortunately, we had with us a Jukahir who passed for a surgeon on the banks of the Omolon, and who al-

refrain from gazing on it, notwithstanding the pain which the brilliant light caused to our eyes. In the night of the 17th I measured with the sextant the apparent diameter of the sun, when on the meridian below the pole, and found it 37′ 15″ in a horizontal, and 28′ 20″ in a vertical direction."—*Am. Ed.*

ways carried a lancet. He was proud of being consulted, and decided at once that it would be right to open a vein, which he did with much expertness: whether this contributed to the patient's amendment I know not, but the pain subsided. We remained where we were for a day, to allow him time to recover strength. We all suffered, as before, from inflammation of the eyes, which was mitigated in some degree by the use of black crape veils and spectacles, and by gently rubbing the eyes with spirits. While waiting for our patient, we occupied ourselves with taking from the deposite provisions for twenty days, and packing them on the sledges.

On the 31st of March, at 2 P.M., we resumed our journey in a north direction, which appeared to present fewer difficulties than the northeastern one; still we only made twelve wersts before night. The evening and night were perfectly calm, with a clouded sky; but the next morning (April 1st) an east wind, which veered in the afternoon to the south, scattered the clouds. We could accomplish but twenty wersts, being obliged to walk all the way, and frequently even to assist the dogs in drawing the sledges.

The 2d of April, being Easter-day, we did not travel: double rations were issued to each individual; and the mildness of the weather and the bright sunshine added still farther to our cheerfulness and the refreshing effects of our repose.

The clear, mild weather continued on the 3d, but the hummocks were large and numerous, and prevented us from accomplishing more than eighteen wersts. Two of our drivers were hurt by the oversetting of their sledges, and one of our best dogs was killed: besides which, we met with many other accidents, and on the 4th of April, after travelling thirteen wersts, were obliged to halt to repair our sledges. The runners of three of them had been broken among the hummocks, and were replaced by

some of the birch-wood we carried with us, which was found very useful for this purpose.

After putting things in the best order we could, we continued our route on the 5th of April. It led across a plain of ice covered with crystals of salt. We saw a seal lying near a hole in the ice, but he escaped us. The ice we found to be nearly four feet thick, the depth of water twelve fathoms, and the bottom greenish mud. The temperature of the water was +29°, while that of the air was +25°, and a current was setting from W.N.W. to E.S.E.

After a march of nineteen wersts we halted for the night, and kept a more careful watch than usual, as we had seen numerous tracks of stone-foxes and bears, and wished to avoid a nocturnal surprise by the latter. During the day we had a fresh breeze from the east, accompanied by a thick fog, which thoroughly wet our tent and clothes, and covered them with rime.

On the afternoon of the 6th of April, after toiling through thirty wersts, we found ourselves at the point where M. Kosmin and myself had turned back on the 28th of March, so that it had taken seven days to accomplish the distance which we had then travelled in 2½ days when our sledges were lighter. Before halting for the night we proceeded 9½ wersts farther. The hummocks had lately increased both in number and height, many of them being of the class of old hummocks, and very difficult to pass, chiefly on account of the deep snow which filled the intervals between them. The exertions of the sledge-drivers in particular were very great. Our interpreter was again attacked by severe cramp in the stomach; and being unable to procure for him any other assistance than the lancet of the Jukahir, to which it did not appear prudent to resort a second time, we felt very anxious about him. It was, moreover, evident, that while we could do nothing to relieve him, he would probably cause us long and

frequent delays. Under all the circumstances, I determined on sending him back to the Kolyma, though we were then 250 wersts from land, and 390 wersts from the nearest inhabited place. We could ill spare either men or dogs; but it appeared the least evil to send away the patient, with two companions to take care of him, on one of the best sledges, drawn by twenty-four instead of twelve dogs. Parting with this double team left one of our sledges without any dogs; and I had it broken up, and made use of the pieces to repair the others. We buried the stores we were unable to carry in the ice against our return, and also such other articles as we thought it possible to dispense with. Our load was still farther lightened by giving up our tent to the returning sledge for the use of the sick man, we ourselves retaining only two *pologi*, or small summer travelling-tents. Our party was now reduced to five persons with three sledges.

On the morning of the 7th of April a breeze from the north dispersed the thick mist which had gathered round us the night before, but it returned in the afternoon; the temperature was +21°.

After only three wersts of tolerably smooth travelling, we found ourselves in a fresh labyrinth of hummocks. In vain we looked from the summit of the highest for some outlet, and were obliged to open a path for ourselves by means of crowbars. Five hours of incessant toil brought us through the worst difficulties, and we were able to advance thirteen wersts farther, still among hummocks of different sizes, partly of old and partly of recent formation: two of the sledges were much injured, in consequence of which I did not arrive at the little camp till late in the night.

On the 8th we travelled two wersts among crowded hummocks, and five and a half wersts over a flat surface covered with salt-crystals, bounded on the north by masses of ice recently thrown up, running

from east to west. We had an extensive prospect from their summits. To the north we saw several parallel ranges of newly-formed hummocks of a greenish colour: they resembled the towering waves of the ocean when violently agitated by a storm. To the south, beyond the flat surface we had crossed, and which looked like a wide river running between cliffs of ice, we discovered high snow-covered hummocks of old formation, which by their inequalities gave to that part of the sea the appearance of a country intersected by deep hollows and ravines.

The contrast between the southern *old* hummocks and the northern *recent* ones was too striking to leave any doubt that we had reached the extreme limit of the shore-ice of the continent, and that we had before us an open sea not bounded by land to the north, at least within a considerable distance. We passed two groups of recent hummocks, and halted for the night among a third group. We had met with several wide fissures, where we found 14½ fathoms, and a bottom of green mud. We again buried part of our provisions, that we might be able to press forward to the north more rapidly.

On the 9th of April we had a clear sky, a moderate breeze from the east, and a temperature of + 9°. Our noon observation gave the latitude 71° 50′, and the longitude by reckoning was 3° 20′ E. of the greater Baranow Rock: variation 18¾° E.

After crossing the ridge behind which we had passed the night, we found ourselves in the midst of one of the wildest groups of hummocks we had ever seen, and among which, after working seven hours with crowbars, we had advanced only three wersts. As there appeared to be no end to our labour in this chaos of ice, and as the exhausted state of the dogs and the dilapidated condition of the sledges threatened us daily with their entire loss, I held a council with the two officers who ac-

companied me, requesting them to give me their opinion whether, under present circumstances, they saw any possibility of our making any material advance. They both said that, even if we should not be stopped by open water, still, with our dogs so worn out, we could scarcely hope to accomplish thirty wersts in a week across these rugged hummocks.

Perfectly coinciding in their opinion, I determined to return. But that we might have nothing with which to reproach ourselves, I sent forward M. Matiuschkin, on whose zeal and fidelity I had the most complete reliance, in a light sledge, with two companions, to examine the ice to the north, in order to determine with certainty if it were wholly impossible for us to proceed farther. He started on the 10th of April: we had had a moderate breeze during the night, and heard distinctly the sound of the ice-fields breaking up. In the morning there was a brisk breeze from the north, and the thermometer stood at +14°.

While M. Matiuschkin was absent, I ascertained the latitude to be 71° 52′, and the variation 18° 45′ E. Our longitude by reckoning was 3° 23′ E. of the Baranow. We had fourteen fathoms and a half water, with green mud.

At the end of six hours M. Matiuschkin returned. He had been obliged to pass over high and very difficult hummocks, and to cross wide fissures; notwithstanding which, by the lightness of his sledge he had been enabled to accomplish ten wersts in a due north direction, when all farther advance was stopped by the complete breaking up of the ice, and a close approach to the open water. He had beheld the icy sea breaking its fetters: enormous fields of ice, raised by the waves into an almost vertical position, driven against each other with a tremendous crash, pressed downward by the force of the foaming billows, and reappearing again on the sur-

face, covered with the torn-up green mud which everywhere here forms the bottom, and which we had so often seen on the highest hummocks. On his return, M. Matiuschkin found great part of the track he had passed over already gone, and large spaces which he had just traversed now covered with water.

All idea of proceeding farther was therefore at an end, and it was necessary to hasten back to our last deposite of provisions, that we might secure them before they were reached by the breaking up of the ice. Having replaced them in the sledges, we were so fortunate as to find a somewhat less difficult route, by which we accomplished sixteen wersts in a W.N. W. direction. We saw numerous tracks of bears going northward, probably to seek for seals among the new openings in the ice. On the 11th of April we had a moderate fall of snow: the observed latitude of our halting-place was 71° 54′, and its longitude by reckoning 2° 52′ east of the greater Baranow Rock.

Our W.N.W. course soon brought us again among old hummocks, and, to avoid them as much as possible, we proposed turning to the N.E., but we first ascended one of them, fifteen fathoms in height, to observe the state of the ice in that quarter. As far as the eye could reach, we saw nothing but new and impassable hummocks, while a sound resembling the rolling of distant thunder, and numerous columns of dark blue vapour, ascending at various points from N.E. to N.W., but too clearly indicated that the work of disruption was everywhere going on. We had here an opportunity of observing, that where the ice cracks, even in places where it is thick and solid, evaporation immediately ensues, which is more or less dense to the view, according to the temperature of the atmosphere, and usually shows itself in the form of vertically ascending columns of a dark hue. As we could not advance to the N. E., we held our course a little farther to the west,

and halted twenty-four wersts from our last night's resting-place. The warmth of the day had melted the train oil, so that we had lost the greater part of it; and there was so little wood left that we could only allow ourselves tea and cooking once a day, and had to be contented at other times with frozen fish, and with snow to quench our thirst.

On the 12th I sent M. Matiuschkin to examine whether it would not be possible for us to penetrate through the old hummocks to the north; and, at the end of three hours, he returned and reported that it would be very difficult, but not altogether impossible. We accordingly made the attempt, but had advanced only six wersts when we came to very thin ice, which was broken in many places, and covered with salt water. These unequivocal indications of an approaching general break-up warned us to proceed no farther, especially as the north wind continued to increase. The depth of the sea was here fourteen and a half fathoms, and the bottom no longer green mud as before, but gravel.

We were now in 72° 2′ latitude, and 262 wersts in a straight line from the nearest land, *i. e.*, the greater Baranow Rock. Throughout the whole extent we had traversed in so many different directions, the nature of the ice and the increasing depth of the sea indicated our greater distance from the continent, and we might presume with much probability that, if any considerable land existed to the north of us, we had, at the utmost, travelled over no more than half the interval which separates it from Siberia. It was not from this consideration, however, nor from any but that of actual physical impossibility, that we now at last relinquished the attempt to proceed farther northward, and sought, instead, to reach the meridian of Cape Schelagskoj, due north of which the problematical land was supposed to be situated, according to my instructions. We therefore retraced our steps, and slept at the spot where we had halted on the 10th of April.

On the 13th we reached the deposite of provisions we had formed on the 6th. We saw here numerous tracks of bears, which had probably been attracted by the smell, but all their attempts to break through the covering of ice had failed. On opening our crypt with crowbars, we found the hollow filled with water which had come up through a recent crack in the bottom; but, fortunately, the crevice was small, and, though the fish was wet through, none of it had been lost. We halted the next day to dry our provisions as well as we could, and to rest our exhausted dogs.

On the 15th we resumed our journey, with a light breeze from the N.N.E., the thermometer at —1°. We travelled thirty-six wersts in an E.S.E. direction, along a kind of path between two rows of large hummocks; but at last the masses of ice (which were in many places covered with earth) approached closer together, and the narrow ravines between them were filled with such deep snow that both men and dogs were buried in it, and, after extricating ourselves, we were obliged to retrace our steps for a short distance. We felt the cold very much during the night, as the temperature was —13°, and we had no fire.

On the 16th we continued our course to the eastward, with clear, calm weather. A good observation at noon gave our latitude 71° 30′, and our longitude by reckoning was 3° 54′ east of the greater Baranow Rock. In spite of deep snow and other difficulties, we accomplished thirty wersts.

Although the temperature was not lower than —9° on the morning of the 17th, a piercing S.W. wind and violent snowdrift obliged us to halt during the day. At noon we availed ourselves of a favourable moment, when the sun appeared between the clouds, to obtain an observation, which gave our latitude 71° 18′, and the longitude by reckoning was 4° 4′ E. of the greater Baranow, the variation being 18° E.

On the 18th the storm subsided, and we continued our route across old hummocks, covered in many places with green mud. When we had gone eighteen wersts we encountered two bears, which we chased, not only with no advantage, but with much positive damage, besides loss of time. We killed one of them, it is true; but he was so thin, and his flesh so hard, that it was wholly useless: several of our dogs were wounded; we lost a great part of the day, and encamped for the night much wearied by the pursuit. During the night we saw signs of returning spring, in a large flight of black ducks (*anas nigra*) proceeding to the N.W.: the floating ice to the north of Siberia is often covered with these birds.

On the 19th our observed latitude was 71° 18′, and our longitude by reckoning 4° 36′ E. of the greater Baranow Rock. A violent storm from the N.W., accompanied by a heavy snowdrift, obliged us to halt at noon for the rest of the day. The next morning, although the wind and snow had not ceased, we continued our journey, and three wersts from our halting-place found a tolerably smooth path, bounded to the north by hummocks running in a S.S.E. direction.

We sounded in a cleft which was only covered by a thin crust of ice, and found twenty-one fathoms, with green mud, and a rather strong current running E.S.E. In the northeastern horizon there were columns of dark blue vapour, similar to those which we had noticed several times before when the ice was separating. We had this day travelled thirty-nine wersts, and we halted for the night under the shelter of a large ridge formed by the junction of old and recent hummocks, the latter extending eastward as far as the horizon.

Early in the morning of the 21st of April, MM. Matiuschkin and Kosmin went forward in a light sledge to seek for the best route towards the east;

but, after passing over rugged hummocks with great effort for a single werst to the N.N.E., they came to a space of open water at least two wersts across. This opening extended from E.S.E. to W.N.W. beyond the visible horizon; the ice beyond it appeared to be intersected by numerous fissures, and from the summit of a hummock they clearly saw extensive open water, with fields of thin ice drifting to the E.S.E. About a fathom beneath the surface they found a strong current setting to the S.E.: the depth of the sea was 19¼ fathoms, and the bottom green mud.

As the open water made it out of the question to attempt proceeding in that direction, we proceeded towards the meridian of Cape Schelagskoj in a S.S.E. direction, where the old hummocks offered rather fewer difficulties than the new ones: we travelled the whole night, but the deep snow prevented us from accomplishing more than twenty-seven wersts.

On the morning of the 22d we were surrounded by a thick fog, which concealed even the nearest objects. When it cleared we saw plainly to the south the black, bluff rocks of Cape Schelagskoj peering above the horizon. The southeastern point of the coast bore S. 45° E., the middle summit S. 40° E., and the southwestern point of the promontory, distant fifty miles or eighty-seven wersts, bore S. 33° E.

At 3½ P.M. we found the variation 18° 49′ E. Our noon observation gave the latitude 70° 53′, and the longitude, derived from the bearings of the land, was 6° 40′ east of the greater Baranow. Our reckoning was in error 24′, corresponding to an actual distance of eight miles. An observation of the dip, in which the poles of the needle were not reversed, gave 79° 57′ N.

The constantly-increasing depth of the sea, and the numerous spaces of open water, so little agreed

with the vicinity of the continent, that if we had not been assured of the fact by the evidence of our senses, we could hardly have imagined that we were within ninety wersts of the mainland. This remark leads to the inference that our hitherto fruitless endeavours to find the supposed Polar land *may*, after all, prove nothing against its existence: strictly speaking, they only prove that, notwithstanding all our efforts, it was found impossible by *us* to reach it; but whether the insurmountable obstacles which stopped our progress would always present themselves, I cannot venture to decide. Two circumstances should be here noticed: first, although in this vicinity we met with many recent fractures, the ice itself was everywhere thick, and covered with solid snow, whereas farther north it was very thin, and had but little snow on its surface: second, north winds are always damp winds; and both these circumstances indicate that the general state of the sea to the north differs materially from its condition in the vicinity of the continent.

Towards evening a fresh S.S.W. wind covered the sky with clouds. The state of the ice induced us to take a S.S.E. course; and on our way we found a piece of half-decayed firewood, which was a very acceptable addition to our scanty stock of fuel. After travelling nineteen wersts, our farther progress in this direction was stopped by a mass of impassable hummocks, which extended to Cape Schelagskoj. The rocks of the cape were clearly distinguishable: their outer point bore S. 30° E. Although the horizon was remarkably clear, we could not discover any indications of land either to the east or to the north. Assuming that any land which was not extremely low must have been visible at a distance of fifty wersts, and that we were eighty wersts from Cape Schelagskoj, it is manifest that in the meridian of that cape no land exists for 130 wersts to the northward of it; and we have al-

ready seen that there is no land for 300 wersts north of the greater Baranow Rock.

Having food for our dogs for only four days longer, and being still 200 wersts from our deposite of provisions, the season also being very far advanced, we determined to return without delay, and on the 23d of April travelled twenty-six wersts in a westerly direction, over hummocks of old ice and through loose snow. Our noon observation gave the latitude 70° 50′, and the longitude by reckoning was 2° 8′ W. of Cape Schelagskoj.

In the afternoon we saw to the south a continuous low coast, apparently elevated above the true horizon. We were opposite to Sand Cape, but, as the interval which separated us from the coast was not less than ninety-eight wersts, this effect must have been produced by the strong refraction of these regions, which often leads to the discovery of remote objects. On the 24th we travelled thirty-five wersts, meeting with frequent tracks of bears and stone-foxes.

On the 25th, the latitude by our noon observation was 70° 54′, and the longitude by reckoning 3° 12′ W. of Cape Schelagskoj: hummocks and loose snow prevented us from accomplishing more than thirty-eight wersts. Large flights of black ducks passed over us to the westward.

On the 26th, though the travelling was still difficult, we made forty-three wersts: a piece of fresh aspen-wood was picked up near our halting-place. Our provisions were now quite exhausted, and the drivers were very uneasy about the dogs, which lose their strength in a very short time after their food fails. But in reliance on our reckoning, by which we could not be more than one day's journey from our deposite, we pushed on cheerfully on the 27th, over a less difficult route than heretofore, and arrived at the spot in the evening, after a march of forty wersts. Ten wersts before reaching it we

came upon the old track of M. Matiuschkin's sledge. The 29th was a day of rest to our dogs and of refreshment for ourselves, enhanced by finding a large piece of drift pine-wood, which enabled us to make a good fire. The marks of teeth and claws about the block of ice, and the torn-up snow, showed conclusively that, during our twenty-eight days' absence, the bears had made many desperate attempts on our storehouse, but happily without success: we found everything uninjured. As the lateness of the season, the low state of our provisions, and the dilapidated condition of our sledges forbade any continuation of our journey, I thought it best to return to Kolymsk by the track we had already travelled; and this had been so much improved by the consolidation of the loose snow, that we made fifty-five wersts on the 29th, fifty wersts on the 30th, and reached the coast on the evening of the 1st of May, where we halted for the night, half way between the greater and lesser Baranow Rocks.

Weary as we were, we rose very early the next morning, to enjoy the long-unseen sight of the brown earth. The gray moss, the low, leafless bushes, and the notes of the few birds, all told of land, of spring, and of a return to animated nature; and we congratulated each other on our toils and privations being over, at least for the present.

It is with the warmest satisfaction that I here record my grateful thanks to my two excellent companions, MM. Matiuschkin and Kosmin, for their zealous support throughout the difficulties of the journey we had just completed, during which we all had frequently to join in dragging the sledges through nearly bottomless snow and over perpendicular cliffs of ice; and it was doubtless, in a great measure, owing to their example that our sledge-drivers encountered so many toils, privations, and dangers cheerfully and without a murmur.

On the 4th of May we arrived at Pochodsk, where

a new and joyful surprise awaited me. My friend and brother-officer, Lieutenant Anjou, had just arrived from the island of New-Siberia with the expedition under his command, proposing to visit Nishne Kolymsk, and to return along the coast to the Jana. But our happiness in meeting thus unexpectedly in these remote regions could not but be materially alloyed by the sight of the suffering and misery which surrounded us. Six half-starved Tungusian families, urged by despair, had exerted the last remnant of their failing strength to reach this place, where they found the few inhabitants in a scarcely less deplorable condition, their stores being quite consumed, and they themselves supporting life as well as they could on remnants of bones and skins, until the approaching spring should bring them the anxiously-looked-for relief. We divided among them all that remained of our provisions, and had reason to hope that this assistance would save the lives of several.

On the 5th of May we reached Nishne Kolymsk, after an absence of fifty-seven days, in which time we had travelled 1355 wersts. I found here new orders from the governor-general of Siberia in reference to our employments for the present year. Our worthy companion, Dr. Kyber, had only partially recovered, and was suffering with his usual patience and cheerfulness. The town was empty, all the inhabitants having gone away to their summer employments except the invalid Cossack, who regularly remains on guard, and our old housekeeper.

On the 10th of May the first rain fell; but summer had not yet fairly arrived, and we had snow repeatedly afterward. About the 17th fresh grass began to appear on the sheltered banks, and on the 22d the ice, which had covered the river for 259 days, broke up. On the 26th of May the usual inundation followed, forcing us to take refuge, with all our goods, on the flat roofs of the houses, there to

await the termination of the flood. To provide against cases which sometimes occur, of the buildings being materially injured by drifting masses of ice, or of the inundation reaching the roof, we had boats at hand to enable us to retire, if needful, to the Pantelejew Mountain. The inhabitants always take care, before leaving the place, to remove all their portable goods to the roofs of their houses, which certainly present a singular aspect, being covered with sledges, chests, casks, and household utensils of every kind. On the 31st of May the water began to subside, and we were soon afterward able to return to our dwellings; but, in spite of the constant fires which we kept up, it was long before we got rid of the cold, damp atmosphere proceeding from the walls, which had been thoroughly saturated with moisture.

CHAPTER XI.

M. Matiuschkin's Journey across the Eastern Tundra in the Summer of 1822.*

I PARTED from M. Wrangell at the village of Pantelejewka on the 1st of July, in company with our former travelling companion and friend, M. Bereshnoi, who was going to Tschaun Bay. His objects were to trade with the Tschuktschi and to seek for mammoth bones; mine was to execute the charge intrusted to me by the commander of the expedition,

* While M. Matiuschkin was engaged in examining the Eastern Tundra, M. Wrangell made a journey through the Stony Tundra. These gloomy wastes are so uniform in their character that more than one description of them was thought to be needless, and that by M. Matiuschkin has been selected, as being the most interesting of the two.—*Am. Ed.*

of examining and surveying the district over which we were to travel. It was agreed that we should go round by Ostrownoje, where we expected to find a Tschuktschi interpreter.

After crossing to the right bank of the Pantelejewka, we loaded and mounted our horses, and began our journey by following for three wersts a narrow path along the mountain-side; then we turned to the east to avoid two rivers, which were so swollen by the heavy rains which had lately fallen that we could not hope to be able to ford them. We rode till sunset over rocky hills clothed with wood, and marshy valleys intersected by streams, and crossed by twilight the Nuptschag, which rises in the White Rocks, and joins the Pantelejewka eight or ten wersts above the village which we had left. The traces of the storm of the previous day were everywhere visible, and our way was frequently impeded by the uprooted trees which lay across our path. We pitched our tent at night, and the horses were allowed to graze.

On the 2d of July the wood became gradually smaller and more scattered as we approached the White Rocks, until there were only low bushes, with occasional stems of larch-trees which had been burned. The marshy ground was overgrown with moss, and intersected in every direction by small brooks. There were here many marsh-birds, and it is the most northern station at which we saw them. As we advanced, both vegetable and animal life became more rare, except the immense swarms of moschetoes, which continued to torment both ourselves and our poor horses dreadfully. We hoped to escape them by halting for the night on a barren elevation, exposed on every side to the wind, but, unfortunately, it fell calm: it was in vain that we crept under horsehair nets, or surrounded ourselves with thick and suffocating smoke from the smouldering heaps of moss and leaves; nothing availed, un-

til the increasing cold of the night brought us a short respite; but, as soon as the beams of the morning sun were felt, our tormentors renewed their attacks.

On the morning of the 3d of July we left the White Rocks, which gradually diminished in height towards the east, and took a southerly course across a hilly country watered by several streams. At first we met only with bushes; but the woods soon became so thick that we had great difficulty in making our way through them. We could not follow any one of the rivers, because, though they all flow towards the Aniuj, they enter it a long way to the westward, which would have taken us quite out of our course. We availed ourselves as far as possible of the paths which the reindeer had opened in their migration.

Early on the morning of the 4th we saw above the trees the summits of the two mountains Krugi and Nugpol, which are near the Aniuj, and between which we were to pass to reach that stream. The forest, apparently hitherto untrodden by any human foot, became still denser and more difficult to traverse, from the tangled roots and branches of numbers of uprooted trees. We had frequently to open a path with hatchets, and sometimes could not advance more than half a werst in the course of an hour. The reindeer tracks, which had hitherto befriended us, now ceased, and we had also many streams to cross: late in the evening we emerged from the wood on a treeless plain, extending from east to west, on which the Krugi Mountain stands; we rode on to the east, and slept among some low, woody hills surrounding the Nugpol Mountain.

In one of the brooks which we crossed we found a very fine mammoth's tusk, which might weigh 2½ pood (100 lbs.), and the value of which M. Bereshnoi said would fully compensate him for all his expenses and trouble hitherto. Unfortunately, on a closer examination, we found that the greater part of

the tusk was so firmly fixed in the frozen bed of the stream, that all our efforts to get it out failed; and not having with us any pointed iron crowbars, the prize had to be left behind, to the great regret of the whole party.

After riding six wersts on the morning of the 5th, we arrived at the summer dwelling of a Jukahir family at the foot of the Nugpol Mountain, and on the bank of the Aniuj River. By their advice we were ferried by them across the river, as they assured us that the forests on the north side were absolutely impenetrable; and that, in the entire absence of any assistance from men or boats, we should find great difficulty in crossing the Poginden, which falls into the Aniuj farther on.

We followed the left bank of the river, first through trees and then over a marsh, which delayed us so much that we could only accomplish twenty-five wersts in the course of the day. We passed the night at a small Tschuwanzian settlement, to reach which we crossed the river. These poor people were suffering terribly from hunger; they had no fishing-nets, and with their lines and baskets they had caught scarcely anything for some time past. We gave them some of our provisions, and their gratitude knew no bounds: the next morning, as we continued our journey after recrossing the river, they followed us for some distance along the opposite bank with shouts and songs. The remainder of this day (the 8th) and the whole of the 9th of July we passed at a little settlement opposite to the Obrom Mountain, partly on account of the slight illness of one of our company, and partly to allow our horses rest.

On the 10th we descended the river to Ostrownoje, on a raft formed of trunks of trees, our horses following by the river bank. We engaged a Tschuwanzian chief, who understood the Tschuktschi language, as our interpreter. This and other prepara-

tions detained us until the 12th, when we crossed the Ostrownoje River, and slept fifteen wersts farther on. The 13th was cloudy and wet, and this weather lasted for a week: we passed over several wooded hills, and slept near the sources of the Konawalowo River. On the 14th we directed our course across a barren plain to a considerable wood, which appeared at a distance to be traversed by a large winding river, which we supposed to be the Poginden, and it was late at night before we discovered our mistake, on reaching the banks of an inconsiderable stream, where we slept. The country through which we had travelled was almost a complete desert: we had not seen a single bird or quadruped, and we were anxious to arrive at the lakes on the Tundra, where we hoped to find wild geese and fish, as our provisions were getting very low. On the 15th we came to the Poginden, and pitched our tent on its bank, in a thick grove of poplars, while some of the party cast the fishing-net, and others employed themselves in looking for a ford. The woods here consist of fine poplar aspens, and a very ornamental kind of willow, with long, slender branches; there are excellent pastures, and many flowering and sweet-smelling plants on the higher banks of the river. We gathered a quantity of wild leeks, which made a very good addition to our scantily-provided soup-kettle. No fish, however, were taken in the net, nor could we find any ford. Still, we consoled ourselves with the hope that the river would be lower next morning, as is often the case with the rivers in this country in summer, from the brooks and smaller tributaries freezing during the night.

At daybreak on the 16th we found the water shallower by two feet in the Poginden, and crossed it at a part where it divides into three branches: the first was easily passed; in the second the water was half up the horses' bodies; and in the third we

nearly lost one of our pack horses. This was just above a waterfall, where the current was strong, but the ford in other respects was the best we could find: we had turned our horses' heads obliquely up the stream, so that they might resist the force of the water with their whole strength, and had reached the opposite shore in safety; but, while the foremost horses were slowly climbing the steep bank, the last was overborne by the current, lost his footing, and must inevitably have been carried down the fall but for the long string by which he was fastened to the other horses.

We advanced in a northerly direction, and saw from the top of a hill a wide marshy plain extending to the Filatow, one of the three principal tributaries of the Poginden, and we followed its edge until we found a favourable opportunity of crossing it.

The Filatow is everywhere very rapid, and forms a number of gravelly and sandy islands overgrown with willows. It is much inferior in size to the Poginden, not being above ten or fifteen fathoms across. We slept on its right bank, under the shelter of a bluff cape wooded with larch: heavy rain fell all the night. High hills extended up the course of the stream northward as far as we could see, while to the southwest the chain appeared to terminate about twenty wersts from us, in a high, rocky mountain. We saw numerous rocks from which the earthy covering had apparently been washed away; and their singular forms a lively imagination might easily metamorphose into colossal figures of men and animals, or into old ruinous buildings.

On the 17th we continued our journey, through rain and sometimes snow, and at the end of ten wersts arrived at the Fedoticha River, which unites with the Filatow in latitude 69° 3′. Here the wood ends, and on the opposite side of the Fedoticha we saw only a few willow-bushes: before crossing it, therefore, we provided ourselves with a supply of

tent-pegs, as we knew we should not find any in the Tundra. During the remainder of this day's march we had to cross numerous streams. At night we were roused by the barking of our dog at the approach of a black bear, but the darkness prevented us from following him, and he escaped.

On the 18th the weather was so bad that we could see nothing of the country through which we passed except that our way lay between precipitous hills and mountains, the valley becoming gradually narrower and wilder, until at length we had no footing but the rocky bed of a former torrent. Dark ravines occasionally opened on either side of us. The Jukahiri assured us that this gloomy scene was the summer resort of powerful demons, though they themselves visit it (with many precautions) in autumn, to hunt the wild sheep which are attracted by the wormwood that grows here in great abundance, as well as on the banks of the Beresowaja or small Baranicha. We arrived at the latter river, and followed it for a short distance; but the violent gusts of wind through the ravines rendered it so difficult for the horses to keep their footing on the slippery path, that we were obliged to halt for the night, and to shelter ourselves from the thickly-falling snow behind a projecting rock.

On the 19th the weather improved, the hills became lower, and the valley gradually widened, so that where we halted for the evening it was above twenty wersts broad, and we began to meet with the small lakes which characterize the Tundras. M. Bereshnoi found a mammoth's tooth here, and I shot a fat wild swan, which at the time was rather the better prize of the two, as our stock of provisions was reduced to a few biscuits. It was, moreover, a good omen, for we were awoke early the next morning by the noise of immense numbers of moulting geese, which almost covered the lake near us. We were soon on horseback, and, armed

with bludgeons, surrounded the lake that they might not escape: our dog drove them on shore, and we knocked down seventy-five. Less experienced than my companions in the use of the weapon, and not so well acquainted with the tricks of these birds, which resemble foxes in cunning, I only succeeded in killing one. When I saw them lying on the ground, with their necks and legs stretched out quite stiff, I passed them by, thinking them dead, and went on to knock down others; but, as I turned back to pick up the slain, they slipped away from me with wonderful agility. The natives are never taken in by them in this way: they deal their blows with remarkable skill and quickness, and the whole scene presents on a small scale somewhat of the animation of the autumn reindeer hunt. In great spirits at this seasonable supply, we loaded our horses with the game, and continued our route towards the coast. My companions thought themselves still thirty wersts from it, when I found by the meridian altitude that we were only five wersts, the sea being concealed from us by some intervening low hills. We slept that night a few wersts east of the mouth of the Beresowaja.

On the 21st of July we joined M. Wrangell at the *balagan* near the great Baranicha. On the 31st we crossed the three arms of that river in M. Kosmin's boat, but were prevented from proceeding farther for twenty-four hours by the sudden illness of our interpreter: on the 1st of August he was so much better that we were able to continue our journey. The geese, which had now completed their moulting and were in full plumage, flew over our heads in large flocks towards the south, and we were unable to shoot one of them, but we killed nine pairs of swans: these birds do not keep together in large numbers, but are usually seen in pairs, or, at the most, in parties of four. Proceeding some wersts farther, we came to a spot of nearly half a

werst in breadth, between a low hill and the sea, where the ground might be said to consist entirely of mammoth and buffalo bones; but a travelling party, the traces of whose fires we saw at a little distance, had been here before us, and carried off all the valuable part of the spoil, namely, the teeth. There were large heaps of jaw bones, which had evidently been thrown aside by them.

On the right bank of the Kosmina, to our surprise we met M. Kosmin, who had come here in his boat by sea, with four companions, for fishing. They had been very successful the first night, but the next day a north wind drove so much ice into the river that they could do no more for several days. This so-called river is, I suspect, nothing but a long, narrow arm of the sea, for the fishermen who had been twenty wersts inland to the S.E. to shoot birds, reported that they found the breadth still the same, and the water too salt to drink.

On the 3d of August we took leave of M. Kosmin, who, with his people, had assisted us to construct a light boat for crossing the larger rivers. Our party consisted of M. Bereshnoi, his interpreter the Tschuwanzian chief Mordowskij, three Jakuti, and myself; and we had sixteen saddle and pack horses.

On the 4th of August I had separated myself from the party to gain a better view of the country from higher ground, when I came on a large flock of geese, which had been later than the rest in moulting. I left my horse grazing, and, quietly approaching the birds from the leeward side, succeeded in knocking down several. Meanwhile, one of our Jakuti had been sent to look for me by the party, who had become uneasy at my absence, and he continued the chase with good success.

On the 4th of August we halted in a large deep valley, which had apparently been a lake at some former period. The steep shores which surrounded it appeared a promising locality for mammoth

bones, but the result did not correspond to the expectations we had formed; during the two next days, however, many bones were found, though no very valuable teeth. We shot two reindeer near a lake. From the top of a hill we could plainly distinguish, 100 wersts to the east, the high mountains of Wajwānin, Geilla, Rautan, and Cape Schelagskoj, and also the bluff rocks to the east and south of Tschaun Bay, so that I was able to take several very useful angles for my survey of the country.

M. Bereshnio determined to lose no time in searching for mammoth bones, but to make a trading intercourse with the Tschuktschi the principal object of his journey. On the 7th of August we took a southwesterly course, between low hills and across lakes which were generally frozen, to what is called the Bolschaja Reka, or Great River, but which is, in fact, the western entrance of Tschaun Bay, which had been hitherto mistaken for a river, where we arrived after a short march.

I must here notice a curious natural feature of the country. Since quitting the Kosmina River we had been passing numerous deep lakes, so close together that they were usually divided from each other only by dams of earth a foot or a foot and a half broad; yet the level of the water in them, so far from being the same, often differed as much as one or two feet. There can, therefore, be no communication between them; but, as the thin separating dikes consist only of vegetable earth, we must suppose them to be consolidated by ice which never melts; and this would also account for the remarkable coldness of the water of these lakes, which in many instances were already frozen. Still it is singular that neither the summer sun, nor the action of the water on either side, should be able to penetrate such thin partitions.

Tschaun Bay has two entrances, divided from each other by the island Aiun (called Sabadàt in the

older maps), the north point of which forms a low sandy cape. The whole island appears to be of a similar character: neither bushes nor grass are to be seen on it, but only moss. The western entrance, near which we were, is the smaller of the two. When M. Bereshnoi was here the preceding summer, he found in it only two feet of water, so that it could be waded across with ease; but now northerly winds had raised its level considerably, and the breadth of the bay was from ten to fifteen wersts.

The narrow strip of sand on which we stood was almost covered with the shells of a kind of muscle, which is abundant in the Aleutian Islands and at Sitka: they were partly overgrown with large-leaved sea-cabbage and other marine plants. We also saw many shells of shrimps, and a muscle-like kind of shellfish, which appeared to me to be the *digitellus crassus*.

Since early in the morning there had been a sharp east wind and a perfectly clear sky. At noon we witnessed a beautiful phenomenon, which my companions pronounced indicative of approaching bad weather of long continuance. The sun was surrounded by four parhelions or mock suns, at equal distances from each other, connected by a circle of brilliant prismatic colours, of which the radius was 22°. The true sun and two of the parhelions were intersected, besides, by a horizontal prismatic arc, extending 80°, having two smaller bows at the two ends. These last, which were perpendicular to the horizon, had peculiarly bright and sharply-defined colours, but in reverse order to those of the rainbow. The phenomenon lasted two hours, and then gradually disappeared. The wind fell soon after, and the bad weather which had been foretold set in with falling snow.

We slept in a narrow valley, which afforded good grass for our horses, and driftwood for ourselves: the ground on which our tent was pitched had only thawed to the depth of three inches.

On the 8th of August we continued our march along the low beach at the foot of a steep earthy bank, from three to seven fathoms in height, full of roots, plants, and fragments of resinous shrubs: it was obviously of recent formation, and contained no traces of mammoth bones.* A spot where the earth had given way presented a curious section of one of the small lakes which had been dried up, the basin of which was only five feet deep: it was lined by two coats of ice, separated from each other by an empty space, the upper coat being covered with earth, on which was growing several creeping plants and shrubs. About noon we came to a deep though not broad river, which enters Tschaun Bay by two arms, and across which we swam our horses, and conveyed our luggage in the boat; the river appeared to come from the west, and I consider it as being most probably another outlet of the Kosmina. The bad weather and the number of small lakes rendered our progress difficult. During the night the hills were covered with snow, and on the 9th it fell so thick as to conceal almost every object from our view. We met with many tracks of bears, and with a board which seemed to have formed part of a wreck. As we approached the Wajwänin Mountain we had firmer footing, over fine gravel and along the foot of cliffs of black slate, intersected by veins of quartz. Towards evening the weather cleared and the wind became due north. Very little ice appears to drift into Tschaun Bay, probably owing to the existence of shallows near the entrances. Two or three miles from the coast we saw an insulated rock, which appeared like a frigate with the wind abeam. I supposed it to consist of quartz, both

* At several places along the coast we found old weather-beaten driftwood at a height of two fathoms above the present level of the sea, while fresh driftwood lay on the beach below. Does not this appear to indicate a change having taken place in the relative levels of the sea and land?

from its whitish-gray colour, and from its having withstood the shock of the waves and of masses of ice, which it could not have done had it been composed of slate. Our route on the 12th was still along the coast, but over a spur of the Wajwānin Mountain: the bad weather had returned, and we slept in a narrow valley, where we had good grass and plenty of driftwood. On the 13th we shortened our route by keeping inland, and cutting off a projection of the coast, and emerged again on the seashore at the end of seven hours, when, as I was riding carelessly along, at some distance from my companions, on turning suddenly round a rock I came upon a bear engaged in devouring a seal. Escape was impossible, for the animal had caught sight of me, and, quitting the seal, made furiously towards me. Defence was equally out of the question, for I had no weapon except a short knife in my girdle. I recollected at the instant having heard the native hunters say, that a bear could not encounter the fixed eye of a man, but would always turn away and fly; so I sprang from my horse and advanced towards him as boldly as I could. The animal was not, however, in the least disconcerted by my steady looks; and it would probably have fared badly with me if at this critical moment my dog had not sprang forward, and by his loud barking put my adversary to flight. I brought away the seal as a trophy, and it afforded the party a very acceptable addition to our reduced stock of provisions.

We had now been travelling nearly six weeks without reaching the country of the Tschuktschi, the object of our expedition. The time had far exceeded M. Bereshnoi's calculations, and the lateness of the season and the bad weather made him fear that our return might prove a winter journey, for which we were wholly unprovided. He held, therefore, a very serious conversation on the subject with our principal guide, the interpreter, who at last

admitted, what I had long suspected, that he had been leading us by conjecture hitherto, and that now he knew no better than we did where to look for the Tschuktschi. Our vexation may be easily imagined. For myself, I had at least had the satisfaction of surveying the country, and the part of the coast we had travelled over, conformably with my instructions, but M. Bereshnoi had obtained nothing but a few mammoth bones in return for all the labour and expense he had incurred: both of us had missed the principal aim and most interesting object of our journey, a communication and acquaintance with the Tschuktschi in their own country. M. Bereshnoi determined to return to the Kolyma by the shortest route across the Tundra; and as it was not for me to oppose his judgment, founded on many years' experience and perfect knowledge of the country, we set out on the 14th of August, greatly disappointed at the failure of our hopes, and turned our steps towards a range of mountains which we saw to the eastward, from which we hoped to obtain such a view of the country as would enable us to select the best line of march. After riding twenty wersts we arrived near the foot of the mountains, which were separated from us by a deep and rapid river, which we crossed with a good deal of difficulty, and encamped after nightfall on the high bank on the opposite side.

A very agreeable surprise awaited us with the first beams of the morning-sun; for accident had conducted us better than our guide, and we here found ourselves within the boundaries of the Tschuktschi territory. The river we had crossed was the Taunmeo, and near it were many Tschuktschi *jurti:* we hastened to them, but they were all empty. The marks of their having been occupied were still so recent, that the wind had not blown away the light ashes from the hearths; and, though bones and other remnants of food lay scattered around, the wolves

had not yet been attracted by them. As the inhabitants could not be far distant, I climbed a neighbouring hill, from which I hoped to have an extensive view, in company with the interpreter, who professed to recognise the country, and said that the name of the mountain on which we were was Geilly; but before we reached its summit we were enveloped in thick mist. This, and two signal-shots from our companions, obliged us to descend. M. Bereshnoi, still adhering to his intention of returning, had proceeded up the river with the rest of the party, and left a Jakut with our horses to wait for us: we mounted, and soon overtook our companions.

The valley of the Taunmeo has a considerable breadth, and, like most of the valleys of this region, is interspersed with numerous lakes. It is bounded on either side, first by flat hills, and afterward by towering masses of rock. In places sheltered from the cold northern blast we found bushes of dwarf-birch, which furnished us with a scanty supply of fuel for cooking. On the 16th of August we saw numerous traces of Tschuktschi dwellings, but no inhabitants: the country appeared entirely deserted. Yet we met large herds of reindeer, which allowed us to approach them so closely that we could not but suppose them domesticated, and the property of the absent inhabitants of the valley; and we subsequently ascertained that our belief in this respect was well grounded, and that the Tschuktschi to whom they belonged had fled at our approach.

The farther we receded from the coast the warmer the air became, and towards evening we were again tormented by moschetoes, which were fortunately soon dispersed by a northwest wind. We saw here and there plants of the black crowberry (*empetrum nigrum*), the whortleberry (*vaccinium uliginosum*), and the cloudberry (*rubus chamæmorus*), but, probably owing to the cold of the summer, none of them had fruited.

On the 17th we had so violent a northwest wind, with rain and snow, that we were obliged to halt; but the storm made it impossible to pitch our tent, and the heavy rain baffled all attempts at kindling a fire. At night the rain and snow were succeeded by frost, and in our wet clothes we suffered much from cold, as the wind still continued, and constantly extinguished the little fire we tried to make with the few twigs we could collect.

At daybreak on the 18th we gladly put ourselves in motion, to warm our chilled limbs by exercise. The lakes were frozen over, the morass was everywhere hard and passable, and around the bays in the river there were margins of ice.

On the 19th we made but a short day's journey, as we had before us a difficult passage over a mountain-range, and it was necessary to spare our horses. We had no fuel, and our only food was a small quantity of dry biscuit.

On the 20th we turned to the westward, along some tracks made by the reindeer. In a plain between two rivers we came upon a pathway, which we afterward learned was that followed by the Tschuktschi in their journey to Ostrownoje. I proposed that we should pursue it; but, being a stranger in the country, I was outvoted by my companions, and we turned up a river, which soon conducted us into a deep and rugged valley bounded by steep rocks, the fantastic forms of which appeared still more strange through the mist, which presently became so dense that we could see nothing but a few projecting points. The rushing of the torrents on every side, sometimes rolling down large masses of rock, the howling of the storm through the ravines, and the thick fog which now concealed every object from our view, made the scene a most desolate one; and, completely ignorant as we were of the place, our farther progress was rendered no less dangerous than toilsome. We soon perceived that the

ground under our feet became still more steep, and the sound of the river more distant: we were in a narrow ravine, which would probably lead to precipices; and we therefore dismounted, and led our horses for two hours, during which we toiled on over loose stones. In this manner we reached a spot where the path seemed suddenly to end, and a precipice lay before us, of which we could not see the depth on account of the mist. Farther advance was now impossible, and the exhaustion of our horses made it equally so to return to the place we had left, now thirty wersts distant. While in this perplexity we heard the sound of a herd of reindeer, and, hastening in the direction of it, we soon got sight of them; but they had scented our approach, and quickly disappeared in the mist. Their tracks, which we followed, led us through a ravine to the southwest, and, after winding up it for some time, we arrived at the summit of the range.

We now emerged from the mist, but a sea of clouds still concealed everything beneath, and the little spot on which we stood seemed like an island in the midst of the ocean. The ascent had been laborious, but the descent was far more dangerous. For half the distance down (about 100 fathoms perpendicular height) we were directed by the track of the reindeer, and we could not but admire their judicious selection of the ground; but the other half was over loose gravel and fragments of rock, where we were no longer able to trace the footsteps of our guides. By keeping an oblique course down this steep and difficult slope, still leading our horses, sometimes supporting them and sometimes supporting ourselves by them, we reached a lake at the bottom: the shore was of gravel, but after proceeding a few wersts we found pasture. Our horses were thus provided for, but for ourselves we had only a few scanty crumbs of biscuit and fish, the last remains of our store. Most of our party were cheer-

ed by the hope that we should the next day reach the woody region and the Aniuj, where we might expect to find food and shelter. They believed that we had just crossed the dividing range of mountains, whereas I felt almost certain that it was still to the south of us; but my reasons, being chiefly theoretic, had but little weight with my companions.

At daybreak, however, it unfortunately became evident that I was right: we had gone widely astray, having crossed a N.W. branch of the principal chain, and being now on an arm of the Baranicha. Still, the opinion of the Tschuwanzian guide prevailed, and we proceeded forward in the same direction. We were all on foot, as our horses were completely exhausted, and our only food consisted of some wild leeks, and a few roots which we had found in a mouse's burrow.

At daylight on the 22d of August, the aspect of the country, and the characteristic sea-mist rising before us in the direction we were going, at length opened the eyes of my companions, and even the Tschuwanzian confessed that he did not remember ever having been here before. It was now admitted that my opinion had been the more correct one, and I was requested to take the conduct of the party. By my reckoning we were two days' journey from the Aniuj, towards which we at once directed our course, travelling on foot through ravines and over rocks for twenty-five wersts, when we became too much exhausted to proceed farther. A fire was lighted, and the kettle hung over it as usual, but we had absolutely nothing eatable to put into it. While we were gathered round it in silence, one of the Jakuti called me aside, and, taking a wild duck out of his haversack unseen by the rest, told me that he had killed it with a stone when he was accidentally a little behind the party. "There," said he, "take and eat it alone; it is too little to do good to all of us, and you are very tired."

I thanked him most heartily for such disinterested kindness, and put the duck at once into the kettle. Weak as the broth was, and little of it as fell to the share of each, we felt strengthened by it. The cloudless sky made us hope for a fine day for crossing the mountains; but in the night a violent wind rose, and next morning the ground was covered with snow. The ascent of the mountains was rendered more fatiguing by our having in many places to wade up to our knees in snow; but at length we reached the summit, when the sun broke for a moment through the clouds, and showed to us snow-covered hills on every side. In our descent, the snow did much to save us from material injury in the frequent falls we met with, and we reached the foot of the mountain by dusk, still much bruised. Notwithstanding our weariness, we had but little sleep during the night; for, after three days' fasting and incessant exertion, the pangs of hunger were severely felt by all.

On the 24th we climbed a lower range of hills, from the summit of which, to our great joy, we saw a wide valley with numerous groups of trees, and by nightfall we reached a small lake. I now proposed to kill one of the horses; but the Jakuti assured me that, in the present heated state of their blood, the use of their flesh would be sure to occasion serious illness. We had just strength enough left to place a net in the lake before we sank on the ground exhausted with hunger and fatigue. The sun was high when we awoke the next morning (August 25th). No one appeared willing to draw the net, as all feared it would contain nothing, and dreaded to be assured that it was so: at length, however, we made the effort; the net was taken up, and we found in it three large and several small fish. Expressions of thanksgiving, of joy, and of mutual congratulation were heard on every side; a fire was kindled in a few moments, and an excellent broth, seasoned with

wild leeks and herbs, soon appeased our hunger, and in great measure restored our strength.

Having finished our meal, we resumed our journey, and, after passing round the lake, came in sight of the Aniuj: to reach it, however, we were obliged to cross a torrent, which, with our broken-down horses, was no easy matter. The bed of the stream was strewed with large blocks of stone, and the water was often up to the saddles. After proceeding five wersts farther, and fording or swimming several other streams, we reached the Aniuj near the mouth of a small river.

We here saw two flocks of geese passing to the south, pursued by a hawk; he pounced on one of them, which fell to the ground dead; but, before he could carry off his prey, we came up and secured it.

We halted on the 26th in a grove of poplars, near the confluence of the Schichutina with the Aniuj, and before nightfall had constructed a weir across the former river and set our net. On taking it up at the end of an hour or two, we found in it more than 200 fish of different sizes; and, having enjoyed an excellent meal, we made several more casts, and caught in all about 800 fish: we did not lie down to rest until the day began to dawn, the night being the most favourable time for this kind of fishing. On the 27th the net was down the whole day without taking a single fish, but the following night we caught 2000. We had now so rich a supply of fish, that, notwithstanding the enormous appetite of the Jakuti,* we were unable to eat them all; and, with the recollection of our own hunger fresh in our minds, we prepared a deposite of those that were left for the use of other travellers, who might arrive at a less favourable season. We constructed a *sajba* on two larch-trees, and placed in it 5000 fish, which we were sure

* The appetite of these people is extraordinary: each one of them eat daily sixty fish or more, when for myself I found ten of the same size quite sufficient.

would keep good, as the frost had now fairly set in; and, to draw attention to the spot, we erected a large wooden cross near it. Several months afterward we had the pleasure of hearing that some wandering families, reduced to the extremity of hunger, had happily arrived at this place, and that our store had saved them from perishing, and supported them for a whole month. We passed the 29th in forming this deposite, and meanwhile our horses were recruiting their strength, as the pasture was still good, though covered with snow. The 30th was the emperor's name-day, and we celebrated it as well as we could: in the afternoon we amused ourselves with shooting at a mark with bows and arrows, a large travelling-knife, a hunting-knife, and a bridle forming the prizes, and the wild shores resounded with our songs. A very opportune and agreeable circumstance closed this cheerful day. As we were to start early on the following morning, the Jakuti were collecting the horses from the wood, when they came to a *sajba* where several winter garments had been deposited. Our own clothes were nearly worn out by the journey, and could ill protect us against the daily-increasing cold: we took, therefore, from the store as many fur shirts, gloves, and boots as we required, and left in their stead an ample compensation in tobacco, and in powder and shot. We also erected here a large cross, to which we affixed a direction to our deposite of fish. Direction-marks of this kind, for a variety of purposes, are frequently met with in these deserts.

At daybreak on the 31st of August we loaded our horses, refreshed by five days' rest, with our baggage and a supply of about 1000 fish, and resumed our journey. Steep hills obliged us to cross the Aniuj repeatedly, but this was not difficult, as from the freezing of the smaller streams the water was low.

On the 4th of September we came to some *jurti*,

occupied by five families, who cleared out a large *balagan* for our reception. Our Jakuti were delighted at meeting with auditors to whom they could relate their travelling adventures with as many embellishments as they pleased; nor did our presence operate on them as the slightest restraint in this respect. There was good pasture here, and M. Bereshnoi resolved to remain for a time, to rest himself and his horses. The short remainder of the season I concluded to employ in surveying the Aniuj to Nishne Kolymsk, a distance of 500 wersts; and having had a raft constructed of trunks of aspens, bound together by willow rods, to be managed by two oars,* on the 6th of September I commenced my voyage down the stream, accompanied by a young Jukahir, recommended to me as being acquainted with the rocks, shallows, and rapids by his father, with whom I left my gun and ammunition for the hunting-season in return for his son's services. Our vessel was awkward and very difficult to direct, especially when we came to falls. On the 9th we reached Mungol, on the 11th Plotbischtsche, and on the 12th Maloji Wetrennoje. I had visited all these places the preceding summer with Dr. Kyber, when the banks were lined with busy and successful hunters: now, birds were roosting in the deserted huts, and wolves prowling around them. On the 12th we met with the family of Korkin, who had entertained me so hospitably when I was last here, and who were now reduced to one meal in forty-eight hours. Our raft had been much injured, and was unfit to encounter the floating ice

* These rafts are made of nine or ten stems of trees, of a light kind of wood (straight aspens or poplars), the ends of which are drawn together to a point. At the other end the stems are spread out in a fanlike manner, with small boards to fill up the interstices, and the whole is bound together with willow rods. Such a raft is very solid, and its form makes it move through the water tolerably fast.

which we began to meet with; and as we were trying to repair it, Korkin came very kindly to offer me the use of his boat, in which we departed on the 13th. We hoisted sail, and with a favouring wind soon reached Molotkowo. Notwithstanding the rapidity of the current, there was already so much ice that we sometimes had difficulty in breaking through it; and, as severe cold might be daily expected, I feared we might be frozen up in the stream at a distance from any inhabited place, and therefore hired seven dogs, which I took in the boat, so that, if such should be the case, we might proceed with them on the ice. In the evening, as we were approaching an island covered with larch-trees, our boat was caught between two large masses of ice and crushed to pieces. We landed safely on the island, and succeeded also in saving our things. As we might be detained here some days, we built a hut of branches, and covered it first with moss and then with snow, over which we poured water, which froze immediately, so that we had a very comfortable, air-tight dwelling. Our dogs we tethered outside, to guard against a surprise by bears.

We waited here two days, till the ice was strong enough to bear us; and on the 18th we crossed to the right bank, close to which we drove slowly along, as our dogs were weak, and the ice still so thin that it sometimes broke under us. On the 20th it became apparently quite solid, and, seeing smoke on the opposite bank, I attempted to cross; but in the middle of the stream the ice gave way, and I should have been drawn beneath it by the current but for a pole which I carried with me, and with which I supported myself till the guide threw me the end of a very long thong, by means of which he drew me out. On the left bank we found a Lamutian family whose reindeer had been destroyed by wolves, and who were supporting themselves by fishing. They had been successful, and had collected

a large stock of dried and frozen fish, of which they let us have as much as we wanted for ourselves and dogs. During the night the "warm wind" set in, and weakened the ice so much that we were detained two days. On the 23d we were enabled to proceed, and on the 24th I arrived at Nishne Kolymsk, after an absence of ninety-four days. My papers had been so thoroughly wetted that I had great difficulty in deciphering them, so as to prepare from them a chart of the country through which we had travelled.

CHAPTER XII.

Fourth Journey on the Polar Sea.—Survey of the Coast as far as the Island of Koliutschin.

The winter of 1822-3 was generally considered a very mild one at Nishne Kolymsk: the temperature was only once as low as —51° (on the 10th of January), and auroras were rare and not so brilliant as usual.

While we were engaged in various preparations for our spring expedition over the ice, and in arranging our surveys and other papers, we were cheered by the arrival of M. Tarabukin, who had been recently appointed to the command of the Kolymsk district, and who took a warm interest in the success of our enterprise.

The fisheries on the Kolyma had been generally successful, and the sickness among the dogs having entirely ceased, their numbers had again augmented. These circumstances were highly favourable for obtaining the requisite means for our journey; and M. Tarabukin, always just and considerate to-

wards the inhabitants, by his judicious exertions, guided by a thorough knowledge of the people and country, obtained for us in due time all the provisions we were in want of. Knowing from experience the great uncertainty of procuring a sufficient supply of dogs, and the large proportion which would probably be found useless when collected, I applied to the inhabitants on the banks of the Indigirka, the Chroma, and the Jana, whose dogs are usually well trained, as well as to those of the Kolymsk district, and travelled myself to those rivers in November, remaining a few days at Ustjansk, where Lieutenant Anjou gave me every assistance in his power.* Having received the promise of fifteen good teams of dogs, with provisions for them

* The choice of dogs is a most material point. A team should always be well accustomed to draw together; they learn to aid each other, by which they are saved much fatigue, and their driver much trouble. The dogs of the Jana and Indigirka are preferable to those of the Kolyma on this account, and also because they are used to much longer journeys, both over the ice to New-Siberia and over the Tundras. A well-loaded sledge requires twelve dogs; but the foremost sledge should have one more, which must be trained as a leader with peculiar care, that he may neither be liable to be tempted from the route by the scent of game, nor turned aside by any difficulty, and may swim across open places when necessary. Dogs that are to be used for a distant journey should be treated with great care for a long time beforehand, and be allowed good food and sufficient rest; when this has been done, they usually show the good condition they are in by changing the whole of their coat in summer, which is only partially the case with weak and ill-kept dogs. When winter has set in, and the time for travelling approaches, they should be carefully prepared for it. For a fortnight previous to their first journey they must be put on a smaller allowance of hard food, to convert their superfluous fat into firmer flesh. They are at the same time to be exercised, by being driven from ten to at the outside thirty wersts, halting and resting regularly every four or five wersts. After this they will travel 150 wersts a day without being injured by it, if the journey be not of very long continuance, and the cold not very severe: in such cases the days' journeys must be proportionably shortened.

for two months, I returned to Nishne Kolymsk, which I reached at the close of the year.

Our great journey could not be begun till late in February; but on the 30th of January, 1823, M. Kosmin started with two sledges for the Bear Islands, to ascertain beyond doubt the true position of Krestowoi Island, and to assure himself of the existence or non-existence of the other island of the same name of which we had been told. He returned on the 17th of February, after a journey which the season had rendered particularly arduous, and gave me a very accurate survey of the islands generally, and of Krestowoi in particular. As he had made a thorough examination of the space around for a considerable distance, without discovering any island besides those he had previously visited, it may therefore be concluded with certainty that no other island exists.

Not only our own people, but nearly all the inhabitants of Nishne Kolymsk, were actively engaged in preparing for our last great journey, in which we hoped to complete the fulfilment of the duties confided to us by our instructions. Old sledges were repaired or improved, new ones made, our travelling-tent put in order, &c. I found that I should have a sufficient number of sledges and dogs to enable me to divide the expedition into two parts, one of which, under M. Matiuschkin, would survey the coast of the Tschuktschi country as far as Cape North, while the other, under my own command, should proceed in search of the supposed northern land. Dr. Kyber joined M. Matiuschkin, as the coast might be expected to afford more that was interesting in natural history than the ice of the sea, and I was accompanied by M. Kosmin.

On hearing that the dogs had arrived from the west, I went on the 22d of February, with M. Tarabukin, to Pochodsk to receive them, but, unfortunately, we found the greater part altogether too

weak to be depended upon for a journey over the Polar Sea. The few good ones we took with us to Sucharnoje, where sixty chosen dogs, the establishment for five sledges, had been previously collected, and on the 26th we took our departure along the coast to the eastward. On the 1st of March we were overtaken by a Cossack, who had been sent on from Nishne Kolymsk with despatches and instructions from the governor-general of Siberia.* I sent back with him two of the Indigirka sledges, as the dogs showed symptoms of an infectious distemper. We continued our journey with nineteen sledges, and reached the same day the *balagan* which we had built near the Baranicha, and which afforded us a very welcome shelter, the cold having increased to —42°.

We now proceeded to distribute and pack the stores which we found here, as well as those which we had brought with us. Our provisions consisted of 7½ pood of rye biscuit, 6 pood of frozen fresh meat, 3½ pood of grits, 1 pood of *saturan*,† 1260 *jukola*, 224 salmon-trout, 12 geese, 12 lbs. of tea, 10 lbs. of sugar, 15 lbs. of sugar-candy, 8 jars of spirits, 20 lbs. of salt, 20 lbs. of oil, 1 pood of Circassian tobacco, 5 pood of train oil, and some firewood. For the dogs we had 7580 *juchala* and *jukola*, 4116 herrings, and some other fish. Besides the provisions we carried a *uross* or tent made of reindeer skins, 2 crowbars, 2 spades, a tea and a soup kettle with an iron trivet, 5 guns, 5 pikes, 100 cartridges, a pocket-lantern and some wax-lights, 2 sextants, 2 artificial horizons, a pocket chronometer, 3 tele-

* These papers had been conveyed the enormous distance of 11,000 wersts from St. Petersburgh to the mouth of the Beresowaja on the Polar Sea, in only eighty-eight days (including a short detention at Irkuzk for the purpose of drawing up instructions conformably to the orders received from the capital). The ordinary post would have required at least six months and a half for the journey.

† See page 85.

scopes, a dip circle, 2 pocket azimuth compasses, 2 spirit thermometers, 1 lb. of quicksilver, and a sounding-line. It took us three days to arrange all these articles in our sledges; and on the 4th of March, when we were ready to start, we were detained by a tremendous storm from the W.N.W. We thought the *balagan* would have been blown down by the force of the wind, but it stood, and afforded us shelter: the temperature was —24°, and our dogs and sledges were buried in the snow. On the 5th, the storm having nearly subsided, we dug them out, and, resuming our journey, arrived on the 8th at Cape Schelagskoj, where we were accidentally brought into contact with a people with whom we had long wished in vain to become better acquainted.

M. Kosmin and myself had gone some way in advance to select a good halting-place, when we saw coming towards us a sledge drawn by reindeer and driven by a Tschuktschi. He stopped at a short distance and called to us; but, perceiving that we did not understand him, he made signs to us to come nearer: we did so; and, as I was extremely anxious not to lose so favourable an opportunity, I made every sign I could think of to detain him till we could be joined by the interpreter. I do not know whether he comprehended me, but, without showing the least fear or embarrassment, he got out of his sledge, and held out his gansa or pipe to ask for tobacco: we immediately gave him some, and he began to smoke very composedly. After a few minutes he repeated several times the word *Kamakai*, which means elder or leader, and then, suddenly getting into his sledge again, we soon lost sight of him among the hummocks.

In the evening, when we were all assembled, we received a visit from three Tschuktschi, two of whom were in sledges, and the third ran along by their side, driving the reindeer. As they approached our camp, one of those in the sledges began to make

numerous signs, apparently to indicate that they were unarmed, and had no hostile intentions. They stopped at the circle of sledges which surrounded our camp, and one of them, a little man of about sixty years old, dressed in a loose, wide garment of skin, fearlessly passed the barrier, and told us that he was the *kamakai*, or chief of the tribe of Tschuktschi settled near Tschaun Bay. His quick and decided movements indicated a powerful frame; and the little fiery eyes which glanced from under his short, coarse hair, showed resolution and the habit of self-dependance. After the first greeting "*Toroma*,"* he offered me a piece of seal and some fresh bear's meat. I took him into the tent, and entertained him with the best we had, tobacco, fish, &c. His behaviour was as calm and unembarrassed as if we had been old acquaintance, and with the interpreter's help a long conversation ensued.

He was principally desirous of knowing what had induced us to travel so far at this cold season, how many there were of us, and whether we were armed. We gave him true answers, and endeavoured to explain the objects of our journey, and to assure him of our peaceable views and feelings. Our appearance had obviously created uneasiness, and his piercing and restless eyes followed our slightest movements. He answered our questions in return with good-humoured frankness. We asked whether his people had seen the cross which we had erected at Cape Schelagskoj in 1820. He said that they had, and had left it untouched, adding that he himself was the first to discover it, and that he had been the more surprised, as no footsteps or traces of men were visible on the drifted snow. The seal and bear hunting had been particularly successful that spring, and his tribe had attributed it to the

* The Tschuktschi pronunciation of the Russian salutation *Sdorowo*, which they have learned at the fair of Ostrownoje.

cross, and had sacrificed a young white reindeer before it.*

He told us that there was no permanent settlement at Cape Schelagskoj, but that they usually came there at this season to hunt the white bears, which they pursue among the hummocks, and kill with spears. In the course of conversation, the old man informed us of his own accord that he was descended from the Schelagi, or, as they are usually called by the Tschuktschi, the Tschewany, who many years since migrated towards the west, and have not since been seen.

The first of these names has been preserved in that of Cape Schelagskoj, and the second in that of Tschewan or Tschaun Bay and River. Our guest took his leave after a visit of two hours, well pleased with his reception and with some little presents which I made him at parting.

On the 9th of March the *kamakai* repeated his visit, with his wives and children, and a young man whom he introduced as his nephew. As we were drinking tea when they arrived, we offered them some; but, on sipping it, they all showed signs of great dislike, and took up a handful of snow† from the ground to get rid of the taste; they were much pleased, however, with the sugar which we next offered them. It is surprising that the quantity of tobacco which they use both in smoking and chewing should not blunt the sensibility of their taste. The nephew was particularly pleased with the sugar, and told us he had eaten some before at Ostrownoje, when he was baptized there. I questioned

* A cross erected by a Russian priest near the Tschaun River had been pulled down and burned by the Tschuktschi at that place, from their believing that since it had been placed there the number of fish in the river had diminished.

† We afterward observed that it is a common practice with them to eat snow after every meal, even when the weather is very cold.

him farther on this subject, but he could tell me nothing, and referred me to his wife even for the name which had been given him. She remembered it, as well as her own, and showed me the small metal crosses which she and her husband had received at the time, according to the custom of the Russian Church, but her knowledge went no farther. While our attention was occupied by these inquiries, her little son took advantage of the opportunity to pilfer a knife and some beads, which he hid in his fur shirt. I was unwilling to disturb the general good understanding, and therefore took no notice of the child's theft.

The *kamakai* was a very civilized person in his way. When I had fully acquainted him with the object of our journey, and had apparently succeeded in satisfying him that we had no designs against him or his people, but that we were come to examine the form and situation of their coast, and to learn by what route Russians could best bring them tobacco and other articles for barter, he not only gave me an accurate description of the limits of his country, which extends from the great Baranicha to Cape North, but also drew for us, with a piece of burned wood, the form of Cape Schelagskoj, which he called *Erri;* Arautan Island, which was correctly represented both as to form and position; and another island to the east of the Cape, which we afterward found there. He farther assured us, in the most positive manner, that there was no other island along the coast. When I asked him whether there was any other land to the north beyond the visible horizon, he seemed to reflect a little, and then said that between Cape Erri (Schelagskoj) and Cape Ir-Kaipij (Cape North) *there was a part of the coast where, from some cliffs near the mouth of a river, one might, in a clear summer's day, descry snow-covered mountains at a great distance to the north, but that in winter it was impossible to see so far.* He said that formerly herds

of reindeer sometimes came across the ice of the sea, probably from thence, but that they had been frightened back by hunters and by wolves; that he had himself once seen a herd returning to the north in this way, in the month of April, and that he had followed them in a sledge drawn by two reindeer for a whole day, until the rugged surface of the ice forced him to desist. His opinion was, that these distant mountains were not on an island, but on an extensive land similar to his own country. He had been told by his father that a Tschuktschi elder had once gone there with a few followers, in large *baidars*, or boats made of skin, but what they found there, or whether they ever returned, he did not know. Still he maintained that the distant northern land was inhabited, and adduced as a proof of it that some years ago a dead whale had been found at Arautan Island, pierced by spears pointed with slate; and as the Tschuktschi do not use such weapons, he supposed that the whale must have been wounded by the inhabitants of the northern land.*

I thanked the old man for his readiness in answering all our questions, and made him a handsome present, promising at the same time that, if his information proved to be well founded, the government would not fail to reward him bountifully. He was extremely grateful, and entreated me to get the emperor to send him an iron kettle and a sack full of tobacco, which he said would make him completely happy. I assured him that I should use my utmost exertions towards his obtaining his wish, and soon afterward he and his party left us, much pleased with our acquaintance, and with our reception of them.

I availed myself of the fine clear weather to take

* The inhabitants of the Aleutian Islands use spears pointed with slate in killing whales; and as those animals are known to swim great distances in a very short time, it is very possible that the whale found at Arautan may have come from thence.

a meridian altitude and 22 lunar distances, by which I found the latitude of the isthmus to be 70° 3′, and its longitude 171° 3′ E., the variation being 18° 3′ E.

On the 10th we continued our journey to the eastward, with a temperature of —26½°, and a violent W. N.W. wind, which repeatedly blew over the sledges. Some of the party were so much delayed by these accidents that they lost sight of the leading sledges; and the thick-falling snow often making it impossible to distinguish the line of coast, they went astray for a time, until they were warned by the increasing size of the hummocks that they were getting farther from the shore.

The coast continues steep and rocky for eighteen wersts, to the mouth of a river, where we halted and repaired our sledges. On the 11th the wind fell, and the temperature was —11° in the morning, and —24° in the evening. At noon we reached the Kosmin Rock, and by a meridian altitude determined its latitude to be 70° 1′, its longitude being 171° 55′ by reckoning, and the variation 18° E. From this rock the shore becomes uneven and hilly. We saw several large heaps of whalebones, but very little driftwood. We crossed over a stream, and halted for the night twenty-four wersts beyond the Kosmin Rock, at the wide mouth of a river called by the Tschuktschi Werkon. The two points of land between which it enters the sea are 11½ geographical miles apart; the eastern shore is low, and covered with coarse gravelly sand; the western rocky, and forming a steep promontory 280 feet high, to which I gave the name of Cape Kyber. Above the rocks rises a conical mountain, called by the Tschuktschi Etschonin. There was a good deal of driftwood on the sandy beach.

About three and a half wersts north of Cape Kyber there is a rocky island of two and a half wersts in circumference, entirely surrounded by hummocks. I subsequently learned that the Tschuktschi call it

Amgaoton. I gave it the name of Schalaurow, after the man whose enterprise, courage, and perseverance, and, finally, whose death in these regions, well deserved that his name should be so recorded.

Part of the shore of Schalaurow Island is covered with heaps of the bones of whales; these are probably the remains of the dwellings of a people who lived on seals and fish, but chiefly on whales, the bones of which were employed as timber in building their huts. We were told that their language was very different from that of the wandering reindeer Tschuktschi, and resembled that of the people who live near Behring's Straits in mud huts, supported on the inside by whalebones, and having their only entrance from above. They are the same race as the Aleutians and the Greenlanders, which have peopled the coasts from the eastern part of North America, along the Polar Sea to Cape Schelagskoj.

On the 13th we had a light breeze from the west, with a thin mist, and a temperature of —11° in the morning, and —24° in the evening. After taking from the eastern shore of the river as much driftwood as our sledges could carry, we left the coast, and directed our course over the ice towards the north. Having proceeded four wersts from the shore, we deposited some of our provisions in the ice, with the precautions before described, and sent back the empty sledges to the Kolyma. The ice here was not above three feet thick, the depth of water five fathoms, and the bottom green mud.

On the 14th, after going 17 wersts in a N.N.E. direction over a tolerably even surface, with a temperature of from —24° to —31°, we came to some very rugged hummocks, where we could only make our way with crowbars, and with so much labour that the evening found us completely exhausted, after having accomplished only three wersts more.

On the 15th the cold diminished a little, the tem-

perature being —13°, and the sky overcast. After toiling the whole day with our crowbars, we had only advanced five wersts, and the sledges were so seriously injured that it was necessary to halt to repair them. About the middle of the day we came to a fissure in the ice, which I availed myself of to obtain soundings, and found nineteen fathoms, with a bottom of mud and sand.

Convinced of the impossibility of forcing our way through these rugged hummocks with our heavily-loaded sledges, I determined to send back eight of them, and to deposite where we were the greater part of our provisions. We excavated two receptacles for the purpose, and placed in them a supply for twenty-three days for men and dogs. With the four remaining sledges and five people, M. Kosmin and myself resolved, if it were possible, to advance towards the north. It being absolutely necessary to carry but little weight, we took with us provisions for only about five days, and a very small quantity of fuel. Our observed latitude was 70° 12′, and our longitude by reckoning 174° E.

On the 17th, violent wind and snow prevented us from commencing our journey, and increased in the night to a tempest, which broke up the ice in such a manner that we found ourselves on a detached island of it about fifty fathoms in diameter. The storm continuing to rage, we were tossed to and fro, and the fissures on every side of us opened wider and wider, till some of them were fifteen fathoms across. Thus we passed part of the night, fully aware that we were in no small danger. At length the day broke, and brought with it a favourable change of wind, pressing the fragment of ice on which we were against the rest, and by the evening we were again in contact and connexion with the firm ice. The depth of water was nineteen fathoms.

On the 19th the storm had subsided and the sky became clear, but we saw plainly to the north the

dark vapours which rise from open water, and which left us but little hope of the possibility of making any considerable advance in that direction. We did not give up the attempt, however, but used our utmost exertions throughout the day to open a path for ourselves among the hummocks: in some places we had to go a long way round to avoid the wide lanes of open water, and in others we crossed over the new ice just formed, which would hardly bear us; but, when evening came, we had only made ten wersts, and were still in sight of the coast.

On the 20th the weather was calm and fine, the northern horizon of a dark blue, and the thermometer at —11°. The hummocks to the north of us now becoming absolutely impassable, we tried to take a W.N.W. direction; but, after advancing about eight wersts, we came to a space at least five wersts across, only covered by a thin crust of ice, which, from its perfect smoothness, we knew to be just formed. Going round it was out of the question, as it extended farther than the eye could reach, from W.N.W to E.S.E. We halted for the night near its margin, the depth of water being 19½ fathoms, the bottom mud and sand.

Our first care on the morning of the 21st was to examine the possibility of our proceeding farther. Beyond the thin ice the hummocks appeared to be of old formation, and less steep and crowded, so that we might hope to find them passable if we could but reach them. This, however, could only be done by trusting to the newly-formed ice, and opinions were divided as to the possibility of its bearing us. I determined, however, to try, and the adventure succeeded better than could have been hoped for, owing to the incredibly swift running of the dogs, to which, doubtless, we owed our safety. The leading sledge actually broke through in several places; but the dogs, warned of the danger by their natural instinct, and animated by the incessant cries of the driver,

flew so rapidly across the yielding crust that we reached the other side in safety, and without in any place absolutely sinking through. The other three sledges followed with similar rapidity, each across such part as appeared to be most promising, and we were now all safely assembled on the north side of the fissure. It was necessary to halt for a while to let the dogs recover a little from their extraordinary exertions.

I availed myself of the delay to take a meridian altitude, which gave our latitude 70° 20′; the longitude, deduced by angles from points visible on the mainland, being 174° 13′, and the variation 21½° E. We profited by the light of a beautiful aurora in the N.E. quarter to continue our journey till the night was far advanced, when we had accomplished twenty-four wersts since noon among old hummocks and loose snow, which afforded comparatively easy travelling.

The morning of the 22d was fine, but towards noon a gale sprung up from the west, with thick drifting snow, which often placed us in great danger, by concealing the open places till the foremost dogs of a team had fallen in, the sledges narrowly escaping from being dragged in after them. After cautiously advancing for twenty-four wersts N. by E., I sounded, and found twenty-one fathoms water, with clay and fine sand. We proceeded ten wersts farther, and slept among a group of hummocks surrounded by fissures. During the night the wind rose, and again widened the openings in the ice; fortunately, however, it subsided before morning, and we succeeded in escaping from our island by forming a kind of bridge of loose fragments of ice.

In addition to the serious difficulties presented by the state of the ice, the provisions for our dogs were beginning to fail. To make them hold out as long as possible, I sent back two sledges to the last deposite, dividing their share among the two which I

still retained, and with these we resumed our route to the north, more for the satisfaction of leaving nothing undone that it was possible to do, than with any hope of a favourable result. Till noon on the 23d of March we had clear weather, with a light breeze, which towards the afternoon became fresh, with gathering clouds; while from N.W. to N.E. the horizon was obscured by the dense blue vapour which in these regions always indicates open water. Notwithstanding this sure token of the impossibility of proceeding much farther, we continued our course due north for about nine wersts, when we arrived at the edge of an immense break in the ice, extending east and west farther than the eye could reach, and which at the narrowest part was more than 150 fathoms across. The strong westerly wind was constantly widening the gap, while the current was running easterly at the rate of a knot and a half. We climbed one of the loftiest icehills, affording an extensive view towards the north, and from thence we beheld the wide immeasurable ocean spread out before our gaze. It was a fearful and magnificent spectacle, though to us a melancholy one. Fragments of ice of enormous size were floating on the surface of the agitated ocean, and were dashed by the waves with awful violence against the edge of the field on the farther side of the channel before us. These collisions were so tremendous that large masses were every instant broken away, and it was evident that the portion of ice which still divided the channel from the open sea would soon be completely destroyed. Had we made the attempt to ferry ourselves across upon one of the detached pieces of ice, there would have been no firm footing on reaching the opposite side. Even on our own side fresh lanes of water were constantly forming, and extending themselves in every direction in the field behind us. We could go no farther.

With a painful feeling of the impossibility of over-

coming the obstacles which nature opposed to us, our last hope now vanished of discovering the land which we still believed to exist; and we saw ourselves compelled to renounce the object for which we had striven through three years of hardships, toil, and danger. We had done, however, all that duty and honour demanded; and any farther attempts being totally hopeless, I determined to return.

According to my reckoning, the point from which we were compelled to turn back was in latitude 70° 51′, and longitude 175° 27′. Our distance from the mainland, in a direct line, was 105 wersts. We had 22½ fathoms water, with a clay bottom.

We proceeded rapidly along our old track towards the coast, and, though impeded by several fresh openings formed during our short absence, we made thirty-five wersts before halting for the night in a group of old hummocks.

On the 24th we set off early, with a moderate breeze from the west, and a temperature of —8°. We had every reason to make all possible haste, for our old track, which we endeavoured to follow as much as possible, was frequently interrupted by fresh hummocks, piled up since the day before, a proof of the very dangerous state of the ice. We had to ferry ourselves across many fresh breaks, on pieces of ice which were sometimes too small to hold a sledge with its team of dogs. In such cases we made the dogs swim, and help to tow us over, but the strong current which generally prevailed in these lanes of open water rendered this a matter of no small difficulty. Not far from our last deposite of provisions the current set E.S.E., with a velocity of four miles an hour; the temperature of the sea at this place was +28°, while that of the air was +9½°. At night we reached our deposite, where we found the two sledges we had sent back, and our provisions safe.

On the 29th we had a gentle breeze from the east,

a thick mist concealing from us the coast of the continent. In the morning the temperature was —2°, and in the evening +10°. The strong current ceased with the change of wind, and many of the fissures in the ice closed again. Still our position on this frail and broken-up surface, which the first wind from the sea would again cause to separate, was too hazardous to admit of my allowing the exhausted condition of the dogs to detain us for a moment in attempting to gain the coast. As we were preparing to start, our best sledge-driver was suddenly seized with such violent pains in the back that he could not raise himself up: this obliged us to remain for the day, to try what our scanty means, which were merely rest, and rubbing with spirits and oil, could do for him. I take this occasion to give to our drivers the praise so justly their due, of having shown unwearied courage, patience, and cheerfulness amid the greatest perils and toils, as well as under every privation. While we were thus detained, two stone-foxes were discovered near us, and, critical as was our situation, the innate love of the chase so far prevailed that the three other drivers, instead of improving the opportunity for rest, occupied themselves in constructing a couple of very ingenious traps, baited with a portion of their own scanty rations, by which they succeeded in taking one of the animals: the other was found at no short distance, having died of hunger.

The severity of the cold was daily decreasing. On the 26th of March, with a mild S.S.E. breeze, we had in the morning a temperature of +27°, and +14° in the evening. Our patient was better for the twenty-four hours' rest we had given him, though wholly unable to drive. As every hour increased the danger of remaining where we were, M. Kosmin, always ready to do the utmost in his power, undertook to drive the sledge himself, putting the sick man in his own place. We could not by any

contrivance manage to carry all our provisions with us, and we had only to hope that we might be afterward able to fetch away the part we were obliged to leave. After driving only three wersts, we found our old track completely obliterated by fresh hummocks and fissures, which rendered our advance so difficult that we were at last forced to abandon a part of the stores with which our sledges were laden. After toiling on for two wersts more, we found ourselves surrounded on every side by lanes of water, growing wider and wider, until to the west the sea appeared completely open, with fragments of floating ice, and dark vapours ascending from it and obscuring the whole horizon. To the south we still saw what seemed a plain of ice, but it consisted only of larger fragments, and even these we could not reach, as we were separated from them by a wide space of water. Thus cut off in every quarter, we awaited the night with the utmost anxiety: happily, the sea and air were calm, and this circumstance, with the expectation of a night-frost, gave us hope. During the night a gentle breeze sprung up from the W.N.W., and gradually impelled the ice-island on which we were towards the east, and nearer to the larger field before mentioned. In order to get over the remaining space, we shoved together with our poles the smaller pieces of ice which were floating near us, and formed with them a kind of bridge, which the night-frost cemented sufficiently to admit of our crossing over upon it before sunrise on the 27th. We had hardly proceeded one werst, however, when we found ourselves in a fresh labyrinth of lanes of water, hemming us in on every side. As none of the pieces floating around us were as large as the one on which we stood, which was seventy-five fathoms across, and as there were certain indications of an approaching storm, I thought it best to remain where we were; and thus we awaited quietly whatever

Providence should decree. Dark clouds now rose from the west, and the whole atmosphere became filled with a dense vapour; while a strong breeze suddenly springing up from the same quarter, increased in less than half an hour to a gale. Every moment huge masses of ice floating around us were dashed against each other, and broken into a thousand fragments. Meanwhile we were tossed to and fro by the waves, and gazed in helpless inactivity on the wild conflict of the elements, expecting every moment to be swallowed up. We had been three long hours in this painful position, and still our island held together, when suddenly it was caught by the storm and hurled against a large field of ice: the crash was terrific, and we felt the mass beneath us giving way, and separating in every direction. At that dreadful moment, when destruction seemed inevitable, the impulse of self-preservation implanted in every living being saved us. Instinctively, and with the quickness of thought, we sprang on the sledges, and urged the dogs to their utmost speed: they flew across the yielding fragments to the field against which we had been stranded, and safely reached a part of it of firmer character, on which were several hummocks, and here the dogs immediately ceased running, apparently conscious that the danger was passed. We were saved; and, joyfully embracing each other, we united in thanks to God for our preservation.

But the continued raging of the tempest, and the loud crashing of the ice, warned us to make no delay, and, after a few moments repose, we hastened onward, guided by our view of the coast, to our first deposite of provisions, four wersts from the shore. There we loaded our sledges with as much as they could carry, and before it was entirely dark reached the land.

We passed the night near the mouth of the Werkon, where an overhanging cliff afforded some pro-

tection from the storm, and enabled us to light a fire, and to refresh ourselves with warm tea and some food, of which we stood greatly in need.

On the 28th the storm subsided, and we had a moderate breeze from the E.N.E., with a clear sky and mild air: in the morning the temperature was +9°, and in the evening +3°. We spent the day in bringing away the provisions which still remained near the coast, and the calmer state of the weather gave us hopes that a steady frost might yet enable us to recover those which had been left at our more northern deposite, supposing it still to exist. Such an increase of our means would have been very acceptable to us on our journey to the eastward, as we could depend but little on receiving any assistance from the Tschuktschi.

On the 29th I allowed the dogs to rest. The weather was clear, and the temperature from —8° to —11°. By a meridian altitude I found the latitude of the north point, on the east side of the Werkon River, to be 69° 51′, its longitude by reckoning 173° 34′; and the variation was 18° 56′ E.

The cold continuing, and on the 30th of March increasing to —15°, I thought it not improbable that our northern deposite of provisions might be reached on the ice. M. Kosmin started, therefore, with three empty sledges to make the attempt, but returned at the end of six hours, having been stopped by wide lanes of water, which had not been frozen over. During his absence I surveyed the eastern bank of the mouth of the Werkon, which consists of a group of rounded hills, on which are numerous pillars or columns, similar to those on the Baranow Rocks: these are called by the people of the country Kekury. The hills terminate in a low headland projecting some way into the sea, forming the eastern point of the mouth of the river. I gave to the whole promontory the name of Cape Kukurnoi, from the above-mentioned Kekury or columns. It bears from

Cape Kyber S. 80° E., distant thirty wersts. The coast between them consists of low flat islands, separated from each other by the different branches of the river, the principal branch being on the east side, and half a werst across. The observed latitude of Cape Kukurnoi is 69° 51′, and its longitude 174° 34′.

A heavy fall of snow, and a strong E.N.E. wind, with a temperature of +5°, induced me to remain here during the 1st of April. On the 2d we took our departure towards the east, and were in hopes of meeting with M. Matiuschkin, to whom I had intrusted the survey of the coast; it being desirable, as there was now nothing more to be done to the north, to reunite our two parties and complete the survey together. As it was possible that he might arrive at this place after we had left it, I caused a signal to be erected on one of the most conspicuous hills, with a notice that we were in great want of provisions, and required his assistance as soon as possible. In fact, the loss of our provisions had placed us in such a situation that all our hopes rested on effecting a junction with the other division.

We slept on the 3d twenty-three wersts from Cape Kekurnoi, not far from the remains of a *balagan* built of driftwood, which appeared to have been erected by Russians, and to have been long unvisited. In the night we had a strong west wind, which continued during the 4th, and favoured our progress so much, that, with the additional advantage of our dogs being animated by numerous fresh reindeer tracks, we travelled forty wersts in less than five hours, across a level tundra, hardly distinguishable to the eye from the frozen surface of the sea.

As our stock of provisions was very low, and I was nevertheless anxious to continue the survey, I sent M. Kosmin in an empty sledge on the sea-ice to endeavour to kill a bear for our dogs. He returned, however, at the end of ten hours, without any success. After proceeding twenty wersts to the

north, he had been stopped by a wide fissure, and, climbing a large hummock, saw from its summit much open water from W.S.W. to N. To the N. and N.E., though the open spaces were not quite so numerous, the ice was crowded with lofty and apparently impassable hummocks: from N.E. to E. he could discover no open water, but the distant horizon was dark blue. There were no tracks of bears, but many of stone-foxes, all leading to the N.E. This report made it evident that we were effectually cut off from the spot where we had deposited our provisions, and that, in all probability, they had been carried away. We could not hope for anything, therefore, from that source: meanwhile we were at least 360 wersts from our nearest magazine at the mouth of the Baranicha, and the remaining provisions for our dogs were barely sufficient for three days. There was, consequently, nothing to be done but to commence our return, which we did on the 6th of March, with the prospect of our dogs perishing by the way for want of food, and our having to travel the rest of the distance on foot.

We had scarcely proceeded ten wersts, however, in a westerly direction, when we were agreeably surprised by the appearance of M. Matiuschkin and his party. They were in excellent health and spirits, and abundantly supplied with provisions of all kinds. It may well be supposed, therefore, that our joy at meeting was great on every account.

While engaged in surveying the coast, and making short day's journeys, M. Matiuschkin had repeatedly met with the Tschuktschi. They had uniformly shown some distrust at first, but afterward became friendly. At Cape Schelagskoj he found a party, whose chief, or *kamakai*, happening to be an old acquaintance of the interpreter's, soon got upon easy terms, and was very communicative. He said that in the tundra east of the Werkon River there were the remains of a house, which his father had told him was

built by Russians who had escaped from the wreck of a large vessel, and had afterward perished there; and farther, that when a party of roving Tschuktschi came upon the huts several years ago, they found human bones in them, apparently gnawed by wolves, some remains of provisions and tobacco, and some large white sails; and at a little distance from the house, a forge, and a number of articles of iron. This account induced M. Matiuschkin to deviate from his course to visit the spot described, where he actually found the ruins of a large hut, formed of well-hewn boards carefully put together, which evidently could not have been constructed by the Tschuktschi, or by passing travellers as a temporary shelter, but must have been the work of persons who had remained there for some time. All these circumstances, taken in connexion with the locality, and the period assigned by the *kamakai*, scarcely leave a doubt that this is the spot where Schalaurow perished. No other navigator visited this part of the Polar Sea at the same epoch; and it is more than probable that, after doubling Cape Schelagskoj for the second time, he was stranded on this desert coast, and here terminated his active and enterprising career. Schalaurow's name is known throughout Siberia, and the cordial sympathy which even our half-civilized companions expressed at the sight of these remains was a touching tribute to the memory of this remarkable man.*

Dr. Kyber had become acquainted at Ostrownoje with some of the chiefs of the Tschuktschi tribes of this coast, who had spoken much of a more northern land, the lofty mountains of which were visible on very clear days from a place which they called Jakan, and which they described with tolerable minuteness. From their description, this place was to

* This enterprising navigator made three voyages along the coast of the Polar Sea, namely, in 1761, '62, and '64, from the last of which he never returned.—*Am. Ed.*

the eastward of our present position, and I determined to visit it. Before we started, I examined the provisions belonging to both divisions, had part of them buried in the ice, and sent six sledges back to Nishne Kolymsk, in order to make the food for our dogs go as far as possible. Of the seven remaining sledges, three were assigned to M. Matiuschkin's division, and four to my own.

On the 7th of April the weather was warm, with a gentle S.S.E. breeze; the temperature at eight in the morning being +32°, and rising at noon to 38½°. I had determined to rest during the day, and to travel in the night, when the twilight was sufficiently bright, and when there was usually some frost to facilitate the draught; but the night between the 7th and 8th was so warm that we were obliged to remain where we had slept on the 5th. We availed ourselves of this detention to take several observations. I found the latitude of the place by a noon observation to be 69° 48′, and the longitude by lunars 176° 10′, which gave us a fresh point of departure. A rock twelve wersts from this spot seems to form the boundary between the flat tundra and the hilly ground, which commences about fifteen wersts east of Cape Kekurnoi. The ground near the mouth of the Auguon River, which falls into the sea twenty-three geographical miles E. from Cape Kekurnoi, is low, and we saw many reindeer there.

On the 8th the weather was clear, and the temperature +25° in the morning and evening, and +36° at noon. After following the coast, which was sixty feet high, for seven wersts, we came to a rock projecting some way into the sea, behind which the shore suddenly becomes low and flat, consisting of gravel and weather-beaten fragments of rock. The place corresponded perfectly in these and other respects with the description which the chiefs had given to Dr. Kyber of Cape Jakan. I determined its latitude to be 69° 42′, and its longitude 176° 32′

ble bend to the S.E. from our halting-place, and after going twenty-three wersts we came to a cliff which runs far out to sea, and, being connected with the shore only by a low isthmus, looks at the distance of fourteen wersts like a small island. As we approached it early in the morning of the 11th, we saw with pleasure several Tschuktschi and their huts on the isthmus.

This is, without doubt, the point which Captain Cook saw in 1777, and to which he gave the name of Cape North. The two hills connected by a low isthmus running from E. to W., the sea to the south, and every other circumstance, agreed perfectly with his description, and the latitude, as afterward observed, completed our conviction.* This cape, which bears in some respects a great resemblance to Cape Schelagskoj, consists of a slate rock 105 feet high, with a ridge still higher, joining it to another cliff to the east: the whole is connected with the continent by the low isthmus mentioned above. Captain Cook supposed the sea which he saw beyond the tongue of land to be a bay, or the mouth of a large river.

As soon as we came in sight of the Tschuktschi we slackened our pace, and halted on the ice at the distance of a werst and a half, in order to avoid causing alarm by a sudden approach. But, in spite of this precaution, our very unexpected appearance seemed to produce no little commotion; we observed them running to and fro, gathering together in groups, and apparently in earnest consultation. Two men then detached themselves from the rest, and approached us at a slow pace: I sent the interpreter to meet them, and to explain our views and the pacific nature of our intentions. When he came up to

* An old Tschuktschi told us that many years ago he had seen two fine large ships. If this be true, they were probably Captain Cook's vessels.

them, they saluted him gravely, and sat down without speaking. The interpreter then filled their pipes, still without a word being spoken; and it was not until these had been smoked out that he began his discourse. It continued a long time, and seemed to make a favourable impression, as the two men were seen to rise up, and allow themselves to be conducted to our sledges.

When they arrived, one of them said that he was Etel, the chief of the tribe; and, in token of goodwill, he offered mé two freshly-caught seals. He added that he was perfectly satisfied of our peaceable intentions, and that he was ready to give us any assistance in his power towards the execution of our undertaking. In the course of conversation we learned that he was related to our friend the *kamakai* at Cape Schelagskoj, and the information we were able to give him in regard to his kinsman contributed not a little to confirm a good understanding between us. I presented him with tobacco and other things, and at parting he repeatedly invited me to return his visit, which I did next day (April 12th).

He received us in a large tent of reindeer skin, surrounded by his various treasures, which were arranged with some degree of elegance. There were a number of stone-fox skins, wide thongs of walrus skin, a quantity of whale bones, some small reindeer sledges very neatly made, leathern cuirasses, javelins, bows and arrows, and a variety of implements for fishing, seal-hunting, &c. "There," said he, "look well at all those things, take from them what you like, and give me in return a gun, and powder and shot, as I am very fond of hunting, and am sure I could use a gun better than the mountain Tschuktschi, among whom I once saw one, and shot with it."

He continued to urge this request, and at last I promised to grant it if he would procure for us thirteen seals for our dogs, fetch for us on his sledges

a supply of firewood, which was twenty wersts off, and accompany us to Koliutschin Island, where he informed me that he had a married sister living. He probably expected to have been asked a great deal more, for, without a moment's deliberation, he agreed to all my proposals, praised my moderation and liberality exceedingly, and immediately gave the necessary orders respecting the driftwood and the seals. Our departure was arranged for the next day; and, having the chief of the tribe with me, I thought I might venture to leave the greater part of our stores in his hut until our return, which lightened our load very much. As I was leaving him, Etel stopped me with a request that he might be permitted to take with him a *batas*,* intended as a present for his sister. I could easily perceive that he was thinking less of his sister than of being thus armed with the peculiar weapon of the Tschuktschi; but I made no objection, and we parted excellent friends.

He made his appearance early the next morning (April 13th), fully equipped for the journey. He appeared to have put on his best clothes, and carried on his back a kind of haversack, with tobacco, and some few other European trifles, intended for barter at Koliutschin. His cap was much ornamented with beads and earrings, and surmounted by a large raven's head, which he told us would ensure us a fortunate journey and a good reception.

We set off, and were accompanied for a considerable distance by the greater part of the inhabitants of the village, who were evidently under some anxiety respecting their chief: at length they took their leave, with many ceremonies, and repeated entreaties that Etel would come back very soon.

Late in the evening we arrived at two single Tschuktschi huts, where Etel advised us to pass the

* A kind of straight sword or large broad knife, fastened to a long handle.

night. The inhabitants were aroused from their sleep by the barking of the dogs, and, being frightened at the sight of so many strangers, caught up a large *schaman* drum, and made a hideous din till their friend Etel came forward with his raven's head, and by this significant emblem, and assurances of our peaceful intentions, induced them to be quiet. We found here only four men and five women; they seemed very poor, and could only spare us one seal.

This place is ninety wersts from Cape Ir-Kaipij (Cape North), and the coast between is low and flat. About forty wersts from the promontory there is a river called Ekechta, narrow, rapid, and abounding in fish. We passed also three inconsiderable streams which fall into the same bay. Driftwood is scarce along this coast, partly from its consumption by the numerous parties of Tschuktschi, and partly from natural causes; the rivers of this district, coming from a country producing no other trees than a few willows, bring down no wood, and the ice in a great measure opposes a barrier to its arrival by sea. The greater part of the driftwood found between the Schelagskoj and Tschukotskoi Noss is probably, however, of American origin, as it consists chiefly of the trunks of pines and firs, which trees do not grow along any of the rivers which enter the sea between the mouth of the Indigirka and Tschaun Bay. Trunks of those trees are brought down in abundance by the Lena, but they are not often drifted as far as the Indigirka, and are rarely seen among the quantity of larch, aspen, and poplars which are floated down by the other rivers of northern Siberia. My opinion that the driftwood on this part of the coast comes from America is confirmed by the assertion of the Tschuktschi, that among the stems of fir they not unfrequently find some which have been felled or hewn with stone axes.

On the 14th of April we continued our journey

along the sandy shore, and, after proceeding twelve wersts, we came to the Amgujim River, which is two and a half wersts broad at its mouth. Etel told us that the reindeer formerly crossed this river in their annual migrations, and that the Tschuktschi were in the habit of resorting here from Koliutschin Island to take them, but that they had ceased to pass this way. Fourteen wersts beyond the river the sandy shore is succeeded by a steep bank of moderate elevation, and the plain rises gradually to the foot of a chain of mountains, running parallel with the coast, at a distance of from twenty to thirty-five wersts. At the point where the steep coast begins, I found the latitude by observation to be 68° 10′, and the longitude by reckoning 182° 6′.

Our progress was so rapid that we accomplished eighty-four wersts in the course of the day, and passed the night at a small Tschuktschi settlement on the west side of Wankarem River, and close to a cape of the same name. Our dogs were too much exhausted to bark, so that the inhabitants were not startled by our approach. Before Etel woke them, he went to a spot not far from the huts, where he had previously told us that some of his ancestors were buried, and repeated with much earnestness a short prayer, offering also some leaves of tobacco to the manes of the dead. When this was completed, he entered one of the huts, and gave his countrymen, no doubt, a favourable report, as the head man of the village came out to welcome us, and we obtained from him several seals for our dogs, in return for which we made him a handsome present. There is a remarkable similarity between the three promontories of Schelagskoj, Ir-Kaipij, and Wankarem: they all consist of fine-grained sienite, with greenish-white feldspar, dark green hornblende and mica, and are united to the mainland by a narrow isthmus. The elevation of the headland and breadth of the isthmus are greatest at Cape Schelagskoj, and least at Cape Wankarem.

On the 15th we started at daybreak: the sky was clear, the horizon to the north dark blue, the air mild, and the temperature +7° in the morning and +5° in the evening. On crossing the isthmus of Wankarem, we saw towards the east, five wersts from the cape, a small island about two wersts in circumference; and at a distance of twenty-five wersts from it, in a S.E. direction, high rocks of granitic porphyry begin to appear. By a meridian altitude, which I obtained sixteen wersts from our halting-place, I found the latitude to be 67° 43′, the longitude by reckoning 183° 34′ E., and the variation 23° E. Cape Onman was distant ten wersts: it is marked by a high mountain, and by a detached range of columns at a short distance from it, 140 feet in height, and resembling the ruins of colossal buildings. Among the masses of rock on the beach, at the foot of these remarkable rocks, were a few Tschuktschi huts.

As soon as we had passed round Cape Onman, we saw on the horizon Koliutschin Island, appearing like a circular mountain, and distant thirty-three wersts. We found a well-beaten track leading to it, over which we advanced rapidly. From this cape the coast trends suddenly towards the south, and the cape itself may be considered as forming the western point of Koliutschin Bay, the eastern side of which we could not distinguish on account of the fog. The shore of Koliutschin Island (Burney Island of Cook) consists everywhere of steep rocks of reddish granite, and it is about three and a half wersts across. The Tschuktschi village which we proposed to visit is situated on the southern point, which does not rise much above the level of the sea. When we were within a quarter of a werst of the huts we halted on the ice. As soon as the Tschuktschi perceived us, the whole place was in commotion; the women and children were sent away to a hill in the rear, and the men, armed with spears,

bataaser, and bows, arranged themselves in fighting order to await our approach. Etel proposed that he should go forward alone to speak to his countrymen: he did so, and in a very short time they were so well satisfied that they laid aside their arms, and we were soon on the most friendly terms. They were very much pleased at my offer to barter beads and tobacco for whales' flesh for the dogs: they had plenty of it to spare, having killed the preceding summer no less than fifty whales, besides walruses. Our good understanding with the islanders was soon made known to the settlers along the neighbouring coast, and they flocked in, bringing on their sledges whales' flesh, walrus-skin thongs, and wood, which they hoped to exchange for tobacco. Above seventy men collected in a short time, and the ice about our little camp resembled a busy fair. Every new visiter expected a present of tobacco before beginning to trade; the better sort sitting in their sledges, drawn by four or five dogs harnessed abreast, and being driven by a man of inferior condition, who ran by their side. Most of them called themselves chiefs, and, as every one expected a larger present than his neighbours, our little stock of tobacco was soon exhausted.

Among the strangers was a chief from Behring's Straits, whose dress was adorned with many singular decorations: he had round his neck some little metal images of saints, and two writings secured between bits of wood, to which he attached great importance. One of these papers was to say that he and his three sons had been baptized, and the other, that he had sent the emperor a fine black foxskin, and had received in return an upper garment (*kamleja*) of red cloth as a mark of the imperial regard. He was a most tiresome boaster, and seemed to consider himself entitled to make the most impudent demands, without offering anything in return, or rendering us the slightest service. With this ex-

ception, we were tolerably well satisfied with the behaviour of these people towards us, though, in spite of all our care, a good many things were stolen; nor does it appear that they confine the exercise of this propensity to their dealings with foreigners, for our friend Etel asked us to look after his property for him, as he had no great confidence in his countrymen of Koliutschin.

The exhaustion of our dogs made it necessary to remain two days at this island; while their condition after the great exertions and exposure to which they had been subjected on the ice, the want of tobacco for purchasing a fresh supply of provisions, and the advanced state of the season, obliged me to think of returning to Nishne Kolymsk, from which we were 1060 wersts distant, and to relinquish the hope which I had entertained of surveying the Asiatic coast the whole way to Behring's Straits. But, though I was unable to accomplish all that I desired, I had the satisfaction of knowing that geography would not lose anything of importance, as my survey was met at this place by that which Captain Billings's expedition had made of the coast from the Straits to Koliutschin Bay. We took our departure on the evening of the 17th; up to the last moment fresh visiters continuing to arrive, and to torment us for presents, and even following us for some distance on our route.

The south point of Koliutschin Island we found to be in latitude 67° 27′ by meridian altitudes, and in longitude 184° 24′ E. by reckoning; variation 23° 26′ E. We were unable to make any observations of dip, as the instrument had been so much injured as to be wholly useless.

Early on the morning of the 20th we reached the village of Ir-Kaipij: the inhabitants were overjoyed at the safe return of their chief, and returned to us the things we had left. They had, besides, procured for us the seals which I had requested, which

it took three days to prepare for the journey. I had hoped to avail myself of this delay to obtain a more exact astronomical determination of the position of the cape by lunar distances; but, unfortunately, the weather was overcast, and I was obliged to content myself with the latitude as ascertained by four altitudes of the sun, taken with both our sextants; the result of which gave Cape North or Ir-Kaipij in 68° 55′ 16″. The longitude, dependant on that of Cape Jakan, which had been astronomically determined, is 179° 57′ E.,* and the variation 21° 40′ E. On the 22d of April we commenced our return along the coast to the westward.

Before I proceed with the account of our homeward journey, I will acquaint the reader with the principal particulars collected either by M. Matiuschkin, Dr. Kyber, or myself, relative to a people hitherto but little known.

The Tschuktschi inhabit the northeastern part of Asia, extending from Tschaun Bay to Behring's Straits in one direction, and in the other from the Anadyr and the upper country of the Aniuj to the Polar Sea. Their neighbours to the south are the Koraki, and to the west the Tschuwanzi and Jukahiri of the Aniuj. They formerly occupied a more extensive territory, before the Cossacks from the Lena subdued the country through which the Kolyma flows. This is proved by their names being given to the greater and lesser Tschukotschje Rivers, and by numerous traditionary accounts of their conflicts with the first Russian settlers on the western banks of the Kolyma. Pogromnoje and Ubiennoje Pole, the Valley of Desolation and the Valley of Death, derive their names from these encounters. The Tschuktschi, though still in a great measure a nomade race, have less of the characteristics which

* Captain Cook made the latitude of Cape North or Ir-Kaipij 68° 56′, and its longitude 180° 49′ E. from Greenwich, by the ship's reckoning.

usually accompany such a mode of life than the wandering Tungusi; they are less cheerful and more provident; they lay up stores for the future, and, in general, do not remove their dwellings without an object, but only when it becomes necessary to seek fresh pasture for their reindeer. They are more covetous and more saving than belongs to the character of the genuine nomade tribes. Their dress differs greatly from that of the Tungusi, which is tight and close-fitting, and well adapted to an active wandering life, whereas that of the Tschuktschi is full, loose, and cumbrous. They wear long wide trousers made of fur, and an ample *kuchlanka*.

The coast of the Bay of Anadyr is inhabited by a people very distinct from the Tschuktschi in figure, countenance, clothing, and language, known by the name of Onkilon (sea-people). Captain Billings, in the description of his journey through the territory of the Tschuktschi, shows that the language of this sea-people has a close affinity to that of the Aleutians of Kodiak, who are of the same stock as the Greenlanders (Esquimaux). There are traditions, that two centuries ago the Onkilon occupied the whole coast from Cape Schelagskoj to Behring's Straits; and it is certain that there are everywhere along this tract the remains of huts constructed of earth and the bones of whales, quite different from the present dwellings of the Tschuktschi. A disagreement between Krächoi, the principal chief of the Asiatic Esquimaux, and an *errim*, or head of a tribe of reindeer Tschuktschi, broke out into open hostilities: Krächoi was defeated and forced to flee, his people migrated, and the coast was deserted. The inhabitants of Ir-Kaipij relate, that Krächoi, having killed a Tschuktschi *errim*, was closely pursued by his son, and that, after some time, he retreated to the rock of Cape North, where he intrenched himself behind a kind of natural rampart, which still exists. The young *errim* followed him thither,

and succeeded in killing Krāchoi's son, by which, according to the ideas of these people, the debt of blood was paid. Krāchoi let himself down from the cliff during the night by means of thongs, and got into a boat which was waiting for him at the foot of the rock. He at first steered towards the east to mislead his pursuers, but the following night he turned westward, and reached Schalaurow Island, where he built the earthen huts of which we had seen the remains. He was gradually joined by his kinsmen, and others of his own tribe, and they all finally fled together in fifteen *baidars* to the northern country, the mountains of which are said to be sometimes visible from Cape Jakan. In the course of the winter a Tschuktschi who was allied to Krāchoi disappeared with his family and his reindeer, and it was supposed that he too had gone to the northern land.

Formerly all the Tschuktschi lived on the produce of their reindeer; but many among them, losing their herds by sickness or other causes, settled by degrees along the coast, where they kill whales, seals, and walruses. These animals, the whales especially, are particularly abundant about Koliutschin; they become more scarce in going westward, and are not met with at all west of Cape Schelagskoj. This is no doubt the reason why we found the population along the seacoast numerous as we approached Behring's Straits. This people are now divided into two classes, the settled Tschuktschi, who live on the coast, and the reindeer or nomade Tschuktschi, who inhabit the mountainous parts of the country. The latter, who form the chief bulk of the population, call themselves Tennygik. The two classes live on good terms with each other, and interchange their different commodities. The inhabitants of the coast furnish to those of the interior whale's flesh and bones, walrus skin, and train oil, which last is a favourite article of food, and receive in return reindeer skins, both raw and made up into clothing.

The huts of the settlers are clustered in little villages along the coast. They are formed of poles or of bones covered over with skin, and come to a point at the top, where there is a hole for the smoke to escape. The low entrance is always turned to the south, and is at the narrow end of the hut: the opposite end is much broader, and in it is a low square inner tent, which forms the sleeping and living apartment. In severe cold weather it is also used for cooking in, by the heat of a lamp of train oil with moss wicks. The usual cooking fire is made of bones which have been soaked in train oil drift-wood for fuel being extremely scarce.

At Ir-Kaipij, the principal occupation of the inhabitants is taking seals and walruses. Seals are sometimes caught by a sort of net formed of thongs, placed under the ice, and in which the animal becomes entangled. Sometimes the following method is resorted to: the hunter dresses himself in white, that he may not be noticed on the snow, and lies down near one of the openings where the seals come out of the water to sun themselves: he is armed with a lance, and carries an instrument consisting of five bears' claws fastened to a stick, with which he keeps gently scratching the snow on the surface of the ice the whole time. The people say that this sets the seals to sleep; but its more probable use is to cover the noise made by the hunter as he gradually creeps nearer, till he is able to reach the animal with his lance. This method rarely fails of success. Wolves are killed by a very ingenious device. The two ends of a strong piece of whalebone are bent together, and fastened by a thread; water is then poured over the ring till it is covered with a crust of ice sufficiently strong to make it retain its form; the thread is then cut, and the whole is smeared over with fat. The wolf, on finding it, swallows it greedily, when the ice melts, and the elastic whalebone springs asunder and chokes him.

Walruses are taken by cutting off their retreat to the water, when they are easily despatched. The walrus is almost as useful to the settled, as the reindeer is to the nomade Tschuktschi. The flesh and the blubber are both used as food, and the latter for their lamps; the skin is made into durable thongs for harness and other purposes, and into strong soles for boots; the intestines furnish a material for light water-proof upper garments for summer use; a very durable thread is prepared from the sinews; and, lastly, the tusks, which are of the finest ivory, are sometimes formed into long, narrow drinking-vessels, which it takes a long time to hollow out, but are more frequently sold to the reindeer Tschuktschi, who dispose of them to the Russians. The most dangerous chase is that of the white bears, which the hunters pursue to their dens among the hummocks, and which are killed with spears, frequently after a severe combat. For fishing they employ baskets of thin willow rods, which they sometimes sink in the water, and sometimes use as nets. For fowling they have a contrivance consisting of a number of long slender thongs, to the ends of which stone pebbles or bits of walrus' teeth are fastened. This they throw up into the air with great dexterity among a flight of geese or other wild-fowl, and the birds, becoming entangled in the loose thongs, which fly in every direction, are brought to the ground. The Tschuktschi, as already mentioned, pursue the white bear, the flesh of which is a favourite article of food; but they are not generally fond of the chase, although their country abounds in wild reindeer and sheep, foxes, wolves, bears, and other large fur animals. They have bows and arrows, but they are not particularly expert in their use. Their principal weapons are different kinds of spears, and particularly the *batats* already described. Iron being scarce, they sometimes employ walrus' tusks in place of it. The settled Tschuktschi use

dogs for draught, but, instead of harnessing them two and two, as is done on the Kolyma, they drive them four abreast. Their sledges are also of a different construction, and resemble the reindeer sledges, except that they are not so large. The dogs are smaller than those employed for draught in other parts of Siberia, and inferior to them both in strength and swiftness. It is remarkable that in 1821 the Tschuktschi lost great numbers of their dogs by the same malady that made such ravages among those of the Kolyma, the Indigirka, the Jana, and the Lena.

From much observation and repeated inquiries, it appears that a kind of slavery exists both among the settled and nomade Tschuktschi. We found among the wealthier people whole families who had always been in a state of servitude: they have no property; they cannot leave their masters, on whose arbitrary will they are entirely dependant, and by whom they are employed in all sorts of hard labour and attendance on their persons, in return for which they are merely fed and clothed. Neither our interpreter, nor the Tschuktschi interrogated by us, could give us any information respecting the origin of this state of things. They merely said, "It always had been so, and must always continue to be so." Possibly the slaves are descended from captives.

The Tschuktschi use only animal food, boiled reindeers' flesh with seals' blubber being a frequent dish. They are particularly fond of the flesh of the white bear, and of the skin of the whale with a layer of flesh adhering to it, eaten raw, and which bears some resemblance to sturgeon. Meat-broth is taken quite cold, and is often mixed with snow, and drank out of large wooden vessels as a beverage to quench thirst. Each individual carries about with him a small tube of reindeer bone, through which he sucks up the liquid from the vessel in which it is contained. Fish, generally, are not much esteemed, and are only eaten when other food fails. Salt is

never used. It is strange, that in a country where the cold is so intense, where one would suppose every means of warmth would be resorted to, every article of food is taken cold. They usually conclude their meals with a lump of snow; and I have often seen them, in a temperature of —36°, or even more, catch up from time to time handfuls of fresh snow, and eat it with great apparent relish.

On the 23d of April we left Ir-Kaipij, and continued our route towards the west. On the 24th we came to the place from which M. Matiuschkin had commenced his journey over the ice, to make a last attempt to discover the northern land. We found here a large wooden cross erected by him, with a short notice to the effect that he had everywhere met with wide open places, and that, after several attempts to advance farther, the breaking up of the ice in every direction had forced him to return, without having been more than sixteen wersts from the coast.

We slept on the 25th at Schalaurow's hut, near the Werkon River, seven wersts N. 80° E. from Cape Kekurnoi. This building, which had been erected sixty years ago, was still in tolerable preservation. All the side timbers were standing: the roof only had fallen in. We examined the mingled earth and snow which filled the interior of the hut, and found some human bones, and a kind of pouch for partridges, made of wood, which was overgrown with moss. The *kamakai* at Cape Schelagskoj afterward told me, that when he was a boy of ten years old, several corpses had been found here, and that five individuals of this unfortunate company had attempted to make the journey on foot to the Kolyma district.

Early in the morning of the 1st of May we reached Cape Schelagskoj, and roused up the *kamakai*, who was still asleep, in hopes of obtaining some provisions from him. Unfortunately, his hunting and

fishing had been unsuccessful, and he could spare us scarcely anything. He handed me a letter which M. Matiuschkin had left for me, containing some farther details of his proceedings during his last unsuccessful attempt on the ice.

Our dogs were very much exhausted by their long journey, and their feet were so injured by the sharp ice, which had now lost its covering of snow, that their track was marked with blood, and some of them were so lame that we were obliged to carry them in the sledges. Our stock of provisions both for them and for ourselves was quite consumed, and an attempt we made to meet the Tschuktschi who usually visit Aion or Sabadei Island with their herds of reindeer had failed, so that there was nothing to be done but to follow the practice of the country, which is, when dogs are in very bad condition, to drive them on, without stopping, till they reach a place where they can have good food, and the rest they require. We did so, and with much difficulty succeeded in reaching the *balagan* at the mouth of the Baranicha, where we found sufficient provisions to permit of allowing our poor dogs two days' rest. We had had a light breeze, with a temperature of +24°, but on the 3d the thermometer suddenly fell to —8°; the cloudless sky, however, made amends for the severity of the cold, by enabling us on that and the following days to add some good meridian altitudes to our previous observations for latitude.

We resumed our route on the 5th of May. As we approached Nishne Kolymsk, the signs of spring became more perceptible, the banks of the river were clear of snow, and, although the ice was still strong enough to bear us, it was covered with water formed by the melting of the snow, or that brought down by the more rapid mountain streams, which were now open. There was very great difficulty in drawing the sledges, and, but for the strong smooth whalebone runners which we had purchased at Kolintschin, it would have been impossible.

At length, on the 10th of May, we reached Nishne Kolymsk, after an absence of seventy-eight days, during which time we had travelled 2300 wersts. M. Matiuschkin had arrived six days before. During his homeward journey he had completed the survey of Tschaun Bay, without meeting with the Tschuktschi anywhere except at Cape Schelagskoj, where the *kamakai* gave him a friendly reception, but could not spare him any provisions.

Our return to Nishne Kolymsk closed the series of attempts made by us to discover a northern land, which, though not seen by us, may nevertheless exist, and be attainable under a combination of very favourable circumstances, the principal of which would be a long, cold, and stormless winter, and a late spring. If another attempt should be made, it would be advisable to leave the coast about Cape Jakan, which all the native accounts concur in representing as the nearest point to the supposed northern region.

We had now completed the execution of our instructions, and were free to leave Nishne Kolymsk, and to commence our homeward journey as soon as it should be practicable. MM. Matiuschkin and Kyber took their departure early in July. They ascended the Kolyma, went from thence to Werchne Kolymsk, and up the Omekon to Irkuzk, where they spent the summer in researches relating to natural history. I was detained at Nishne Kolymsk until the 1st of August, when I received orders to await the arrival of a functionary at Jakuzk, who was commissioned to examine all my accounts with the inhabitants of the Kolymsk district, and all the payments I had made them. Unfortunately, this person did not arrive for a long time; and, though I occupied myself during the interval in arranging my journals, surveys, and maps, yet I own I felt this delay in the highest degree irksome, and a greater trial of patience than all our toils and difficulties hitherto.

At length he came, the simple accounts were soon gone over, and, all being settled, I left Nishne Kolymsk with M. Kosmin, after a stay of three entire years. We soon reached Sredne Kolymsk, where we hired horses to take us to Jakuzk from our old acquaintance M. Bereshnoi.

CHAPTER XIII.

Return from Sredne Kolymsk to St. Petersburgh.

It was on the 19th of November that we left Sredne Kolymsk. Instead of taking the postroad through Saschiwersk and Tabalog, we followed the northern route, which is travelled by the trading caravans across the heaths inhabited by the Jakuti, along the Selenächa River. Although by this means we traversed the country in quite a new direction, the uniformity which prevails throughout northeastern Siberia is such, that a detailed description of our return to Jakuzk would be little more than a repetition of what has been already said: I will therefore confine myself to the mention of a few particulars, which had not before fallen under my notice.

The preference given by the trading caravans to the route along the Selenächa, is on account of the excellent food afforded to their horses by a species of *equisetum*, which grows abundantly on the sandy banks of that river, and is not met with along the postroad. In summer this plant is bitter and distasteful to the horses; but the first frosts, without altering its green colour, give it a sweetish flavour: it is then much liked by them, and they soon become strong and fat from feeding on it. This useful plant,

which is hardly an inch in height, is known in the country by the name of *tschiboga*. Although it requires frost to render it palatable, it is sometimes injured by a long continuance of extreme cold, which renders its hollow tubes so brittle, that the hoofs of the horses, in scraping away the snow, destroy them.

We always endeavoured to pass the night on the best spots for pasture, though they were not always the best in other respects. On the 9th of December, for instance, with a temperature of —42°, we slept on an exposed plain where we had no shelter from the north wind, around a fire kindled in the open air. I had a good opportunity of remarking in the Jakuti who accompanied us the degree to which men can harden themselves by long habit against cold and exposure in the severest winter journey. These people do not use any kind of tent or covering, nor any of the larger fur garments, without which we could not venture into the open air when the cold had attained a certain intensity.

A Jakut, when travelling, wears only his usual in-door clothing, and at night spreads a horsecloth on the snow, which, with a saddle for his pillow, forms the whole of his bedding; his only covering being the fur jacket which he has worn during the day, and which he pulls off and puts over his back and shoulders, while the front of his body has scarcely anything to protect it, and is turned to the blazing fire. When he has lain for some time in this way, and feels so warm that he is near perspiring, he stops up his nose and ears with little bits of fur, and covers his face so as to leave only an exceedingly small aperture for breathing, and this is all that he requires in the most intense cold to keep from freeizng during sleep. Even in Siberia the Jakuti are called *iron men;* and I do not believe that there are any other people in the world who can endure cold and hunger as they do. I have seen them frequently in the most intense cold of

this country, after the fire had long been extinguished, and when the light jacket had slipped off from their shoulders, sleeping completely exposed to the heavens, with scarcely any clothing on them, and their bodies covered with a thick coat of hoar-frost.

They are also remarkable for the acuteness of their sight. A middle-aged Jakut assured M. Anjou that he had several times seen that blue star, pointing to Jupiter, *swallow up another very small star, and soon afterward vomit it forth again:* thus he had observed with the naked eye the immersion and emersion of one of Jupiter's satellites. Their memory and local sagacity are also very surprising, and are of the greatest use to them in their journeys through these extensive and unvaried wastes. A pool, a stone, a bush, a rise of ground so slight as to be hardly perceptible, objects which a European scarcely notices, are deeply impressed in their memory, and serve years afterward to guide them over the desert and trackless *steppe*.

Our march was often rendered more difficult by a phenomenon peculiar to these regions, resembling the glaciers, though of quite a different origin. In valleys (particularly in the long valley of the Dogdo) where the gravelly soil is parched by the hot summer and the dry autumn which usually follows, it often happens in the middle of winter, when the cold is most intense, that a large quantity of water gushes up from the earth, spreads itself on all sides, and immediately freezes. This first crust of ice is soon broken by fissures, through which fresh water rises, and a second crust is formed; and in this manner fresh layers are continually added, as more water presses up from the deep cavities in the ground, until at last the height of the whole mass is such as to cover the bushes and shrubs, and even trees of moderate size. These fields of ice, which are called *taryni*, continue during the winter; and when they are melted by the heat of the sun in

spring, they form a number of streams of greater or less size, which rush down to the lowest levels, and sink into the earth as the ground thaws. On the Ochozk route, and among the Omekon Mountains, large fields of ice are met with, which, being in elevated places and shaded from the sun, do not melt during the whole summer. These masses are probably formed by the accumulation of rain and snow water, and differ therefore materially from the *taryni* of the Dogdo River. The ice of the latter is of a dazzling white colour, and seems to contain a quantity of calcareous particles, as we judged from its taste, and from its being so hard as to be quite unfit for washing or for making tea. When the *taryni* are hard frozen, they are both difficult and dangerous to cross. The surface is so smooth that even horses properly roughshod can scarcely keep their feet, and are often borne down by their loads, and not unfrequently killed on the spot. It is particularly dangerous when, in passing a ravine or a declivity thus covered, the caravan is caught by one of the furious and irresistible gusts of wind common in this country, and which sometimes hurl men and horses together down a precipice.

The passage of the *taryni* is less hazardous, but not less troublesome, when they are covered with a fresh overflow of water not yet congealed, and the caravan has to wade through the ice-cold element, which not unfrequently causes both the hands and feet to freeze. But the hardy Jakuti receive no injury; after wading through a bath of this kind, their high fur boots (*torbassy*) being completely wet through, they plunge their legs two or three times into the snow; the effect of this is to draw out the water through the skin of the boot, when it forms a crust of ice on the outside, which is easily scraped off; if the time suits, the boots are then dried by a fire, but this is usually deferred till the night halt.

On the 22d of December we arrived at Wercho-

jansk (called by the Jakuti Boronuk), where we took leave of our friend Bereshnoi. His horses had brought us from Sredne Kolymsk, a distance of 1224 wersts, in thirty-two days. The little settlement of Werchojansk consists of only five wooden houses, and a newly-built church of the same material, which is not yet consecrated. It is on the western side of the Jana, but will probably be transferred in time to the opposite shore, as, from the bend of the river, the bank on which it stands is being gradually undermined. I stayed at the house of M. Gorochow, a merchant; and my surprise and pleasure were great on seeing there a good-sized, neat, and clean room, with regular windows, good furniture, a handsome fireplace, some prints, and, above all, a small bookcase, containing a collection of our best authors. It was years since I had seen any books except the very few which I had brought with me. While enjoying the unexpected sight of these marks of civilized taste and intellectual cultivation, I was summoned to table, and, after living for three years upon raw and dried fish, I must confess that the well-arranged board, clean cookery, and thoroughly European dinner, formed a very pleasant addition to the agreeable conversation of my host, and of M. Michailou, the commissioner of the district. The latter gentleman informed me that the Ustjansk expedition had passed through early in November, on their way to Jakuzk.

Werchojansk, which is situated, according to our observations, in latitude 67° 33′, is the headquarters of M. Michailou, who has the superintendence of the Jana, Indigirka, and Shigansk circles: a district equal in extent to France, but the whole population of which does not exceed that of a single large village. Nevertheless, the commissioner, who makes the circuit of this great desert every year with a secretary and clerk, finds sufficient to do; for, where there are even no more than a couple of families in a place, there is some dispute to be adjusted.

The people about Werchojansk are Jakuti, and their chief occupation is the care of cattle, to which the hilly country and the milder climate of the sheltered valleys are very favourable. There is also much less snow here than in other parts of north-eastern Siberia, so that the cattle can be left out in winter, and find sufficient pasture. This is the more important, as from the very dry summers the growth of grass is never such as to afford a good stock of hay. There are, generally speaking, fewer lakes abounding in fish than in the Kolyma district; but some of them are so full of a small species of fish about two inches in length that they may be scooped out of the water with buckets. These little fish, which are preserved for the winter by being frozen, furnish a very good article of food, pounded and boiled with the finely-grated inner bark of the larch-tree. Hunting is much followed: hares and grouse abound, and the country is rich in fur animals; elks, reindeer, black bears, wolves, musk deer, red foxes, ermines, wolverines, and squirrels of the most valuable kinds, are all numerous; but black foxes are rare, and sables are not found here. The musk deer (*moschus moschiferus*), called here *kabarga*, must be abundant, as a pound of musk is commonly sold for no more than from ten to fifteen roubles.

The character of the Jakuti of Werchojansk has been injured by constant intercourse with their countrymen of Jakuzk, and litigiousness, quarrels, dishonesty, and a passionate love of card-playing are equally general among both. Distrust of their neighbours induces them to keep their cattle at night in the *jurte* which they inhabit, the pestiferous atmosphere of which defies description. The Jakuti who live near the Kolyma are far more cleanly in their habits; they are better dressed, and their dwellings are more comfortable and neat; this is particularly the case in the settlements at some distance from the route along which the traders who

carry brandy pass on their way from Jakuzk to Kolymsk.

During my stay at Werchojansk, a kind of epidemic catarrhal fever prevailed throughout the district; the symptoms were violent oppression of the chest, noise in the ears, headache, &c. It made its appearance when, after an unusually thick fog which lasted a week, intense cold set in suddenly, and increased from day to day. From the 23d to the 26th of December the temperature was —49°, —58°, —62°, and —64°. A Cossack, whom I had previously sent forward with my papers, died on the way of the malady. Every one was more or less ill: I suffered most from a painful constriction of the chest, which did not leave me until after my arrival at Jakuzk, where I had medical aid. It is a general opinion here that this and other dangerous epidemics which prevail among the natives are not nearly so formidable to those who have but recently arrived in the country; but, when strangers have been exposed to the climate for some time, they lose this advantage.

We stayed over Christmas day, and left Werchojansk on the 27th of December. The cold still continued, and the thermometer constantly indicated —58°. In such a temperature a journey in sledges would have been very disagreeable, but on horseback the actual suffering is such as cannot well be imagined by those who have not experienced it. Clothed from head to foot in stiff, cumbrous furs, weighing from thirty to forty pounds, one cannot move; and under the thick fur hood, which is fastened to the bearskin collar, and covers the whole face, you can only draw in, as it were by stealth, a little of the external air, which is so keen that it causes a very peculiar and painful feeling in the throat and lungs. To travel the distances from one halting-place to another takes about ten hours, during which time you must continue constantly on

horseback, as the heavy dress makes it impossible to wade through the snow. The poor horses suffer at least as much as their riders; for, besides the general effect of the cold, they are tormented by ice forming in their nostrils and stopping their breathing; whenever they intimate that this is the case, by a distressful snort and a convulsive shaking of the head, the drivers relieve them by taking out the pieces of ice, which would otherwise suffocate them. When the frozen ground is not covered with snow, their hoofs often burst from the intensity of the cold. The caravan is constantly surrounded by a thick cloud of vapour; nor is it only living bodies which produce this effect, but the very snow smokes. These evaporations are instantly changed into myriads of needles of ice, which fill the air, and cause a continual slight noise, not unlike the sound of torn satin or thick silk. Even the reindeer seek the forest to protect themselves from the severity of the cold; or, if they are in the tundras, where there is no shelter to be found, the whole herd crowd together as closely as possible to gain what little warmth they can from each other, and they may be seen standing in this way quite motionless. Only the dark bird of winter, the raven, still cleaves the icy air with slow and heavy wing, leaving behind him a long line of thin vapour, marking the track of his solitary flight. The frosty influence extends even to inanimate nature; the trunks of the largest trees are rent asunder with a loud explosive sound, which in these deserts falls on the ear like a signal-shot at sea; large masses of rock are riven from their ancient sites; the ground in the tundras and in the rocky valleys cracks, and forms wide yawning fissures, through which the waters beneath the frozen surface spring up, throwing off a cloud of vapour, and being instantly converted into ice. Nor are the effects of this degree of cold confined to the earth; the beauty of the deep blue polar sky, so often and

so justly praised, disappears in the dense and hazy atmosphere, and, though the stars still glisten in the firmament, they no longer shine with their wonted brilliancy.

We had still before us the difficult passage of the Werchojansk Mountains, the foot of which we reached on the 4th of January, 1824. A violent cutting wind, blowing through the ravines, obliged us to seek shelter in a *powarna*. At sunset the whole country became covered with a thick frozen mist, which the wind drove towards us through the narrow mountain passes; and this was followed by a storm so violent that it must have overthrown our frail shelter if its lowness had not saved it. The gale lasted till the following morning, when it subsided, the atmosphere cleared up, and the temperature rose to —11°, which, by comparison, seemed mild. We hastened to avail ourselves of this favourable change to commence our passage across the mountains. On the 7th of January we reached the opposite side of them, and entered a fine fir wood, the evergreen beauty of which was the more striking, from the recent storm having swept the snow from the branches. On the 10th of January we reached Jakuzk, where I found my valued friend Lieutenant Anjou, who had returned in safety from his arduous journeys along the Jana and across the Polar Sea, and passed many happy hours with him in recounting our respective adventures.

Since we were at Jakuzk four years before, many changes had taken place. The old *ostrog* had been pulled down, and the materials had been employed in constructing a kind of clubhouse and assembly-rooms, where I saw a well-lighted ballroom, a buffet with refreshments, a billiard-room, a cardroom, &c.: public dinners and dances were given here, and the ballroom was occasionally even converted into a theatre.

With our arrival at Jakuzk the expedition termi-

nated, and our companions dispersed in various directions to regain their homes. M. Anjou and myself, however, were still detained for another month to close our accounts: this was at length completed, and we left Jakuzk together on the 8th of February for Irkuzk, where we arrived on the 25th, and found Dr. Kyber waiting for us. We here requested permission from the governor-general, M. Lawinski, to visit the warm springs of Turinsk, on the other side of the Baikal, which so far relieved us from the severe rheumatic affections caused by our journeys over the Polar Sea as to make full amends for the delay incurred in our return to St. Petersburgh, which we did not reach until the 15th of August, 1824, MM. Matiuschkin and Kosmin having arrived three months before us.

APPENDIX.

Ice of the Polar Sea.—The Polynja, or Open Water.—Currents.—Gain of the Land on the Sea.—The Aurora Borealis.

The fur-hunters, who visit New-Siberia and Kotelnoi Island every year, and pass the summer there, have observed that the space between those islands and the continent is never completely frozen over before the last days of October, although fixed ice forms along the coasts at a much earlier period. In spring, on the other hand, the coasts are quite free by the end of June, whereas, at a greater distance from land, the icy covering continues firm a full month, and would probably remain so still longer, were it not weakened by the multitude of cracks which are formed in the spring, and some even in winter. Throughout the summer the sea is covered with fields of ice of various sizes, drifted to and fro by the winds and currents, and, when tossed by storms, they present a truly magnificent spectacle.

The ice which the larger rivers annually bring down is never entirely melted the same year, either by the action of the sun or by that of the sea; the quantity of heat absorbed in the process of melting keeping down the temperature. This yearly accession from the rivers might be expected gradually to augment the quantity of ice in the Polar Sea; and such would seem to be the case, from what the inhabitants of the coast near Cape North affirm, namely, that formerly the sea in the neighbourhood of the cape used to be free from ice in summer, where it is rarely so now. The surface of the Polar Sea in

winter resembles, on a smaller scale, that of the steppes or tundras of the continent, the hummocks taking the place of the hills and mountains on the land, and the open spaces, or *polynji*, and the fissures representing the lakes and rivers.

In the summer and autumn the ice breaks up into separate fields, and lanes of open water between them are met with near the land as well as near the open sea: the winds at this period, in driving the fields against each other, form what are called autumn hummocks, which are usually about six feet high, and consist of sharp, pointed pieces. Winter hummocks are formed in the same manner where lanes of water exist, which at that season is only in the vicinity of the open sea, and usually parallel with the external margin of the ice; these hummocks are therefore generally in ridges, preserving the same direction. There are none of this description between the islands of New-Siberia and the continent, nor have the ridges in that quarter any uniform or determinate course. Winter hummocks are frequently 100 feet in height, sometimes with one perpendicular and one sloping side, as described in page 144, and at others with declivities on both sides: they are formed of a great number of pieces of all sizes heaped together, and among which are occasionally fragments of very old ice. The colour of the ice is either a bluish green or a clear white; the former is the congealed sea-water, the latter the snow which has fallen on its surface, pressed by its own weight, and cemented by occasional partial thawing and freezing. The ice formed from sea-water is either fresh, in which case it is more blue and transparent, or bitter, when it is much less transparent, of a greenish hue, and without air-bubbles. Some of the autumn ice is of a dirty gray colour and opaque, and this is formed in shoal and muddy water. The thickness of the ice produced in a single winter is about nine and a half feet; an ex-

posure to a second winter will add about five feet more, and doubtless a third winter will make a still farther addition. But masses are formed of 150 feet and upward in depth. These consist of fragments heaped upon each other by the force of the wind and waves, and cemented together by the frost: the process of their formation is frequently shown by intermediate layers of white and opaque ice, composed of the snow which was originally on the surface of the now imbedded fragments.

Wherever the ice is formed from sea-water, and its surface is clear of snow, the salt of the sea may be found deposited in crystals which are called *rassól;* and in the neighbourhood of the *polynji* the layer of salt is frequently of considerable thickness. It is a great impediment to draught, acting upon the runners of the sledges like so much coarse sand; though bitter in flavour, and not devoid of medicinal properties, the fur-hunters use it instead of other salt, on their journeys to and from the islands of New-Siberia.

The great *Polynja*, or the part of the Polar Ocean which is always an open sea, is met with about twenty-five wersts north of the islands of Kotelnoi and New-Siberia, and from thence, in a more or less direct line, to about the same distance off the coast between Cape Schelagskoj and Cape North. Tatarinow, who accompanied the surveyor Pschenitzyn to New-Siberia in April, 1811, found an open sea about twenty-five wersts north of that island, as did Hedenström in 1810, about seventy wersts east of it. Lieutenant Anjou, in 1823, traced the boundary of the open sea some miles to the north of these islands, as is shown by his track in the map annexed to this work. Our several narrations have related the various instances in which we encountered either the open sea itself, or the very thin ice indicative of its immediate vicinity, at different points of the general boundary-line above described. The Tschuktschi who live near Cape North, when

speaking of the *Polynja* in that neighbourhood, remarked that the shore-ice usually extends somewhat farther seaward about that cape than about Cape Jakan. Our frequent experience, also, that the north and northwest winds, and often the northeast winds, were damp to a degree sufficient to wet through our clothes, corroborates the existence of an open sea at no great distance in those directions.

During the summer, the current between Swätoi Noss and Koliutschin Island is from east to west, and in autumn from west to east. This is shown by the accounts of Lächow in 1773, Schalaurow in 1762, and Billings in 1787. The Tschuktschi also informed us, that in summer the ice drifts rapidly along the coast towards the west, and in autumn towards the east. The prevalence of N.W. winds is doubtless the occasion of the S.E. current, which we frequently observed in the spring.

It has been noticed in the narrative, and may be seen on the map, that in the part of the Polar Sea over which we travelled, the water deepens almost imperceptibly in going towards the north, but much more rapidly in going towards the east: the bottom was everywhere soft, except in a single instance in 72° 3′ N. and 166° 12′ E., where we found it rocky.

The inhabitants of the northeast of Siberia generally believe that the land is gaining on the sea: this belief is chiefly founded on the quantity of long-weathered driftwood which is met with on the tundras and in the valleys, at a distance of fifty wersts from the present sea-line, and considerably above its level. Under no circumstances of weather is either sea-water or ice now ever known to come so far inland. In Schalaurow's map, Diomed Island is marked as being separated from the mainland to the east of Swätoi Noss by a sea-channel, whereas no such channel of separation now exists. It may be useful towards future researches of this nature to state, that on Wiliginsk sandbank, near the lesser Baranow Rock, there is a single column

of rock, the summit of which, in May, 1822, was thirty English feet in vertical height above the frozen surface of the sea.

The general characteristics of the *aurora borealis* are so well known that it is unnecessary to describe them here; I shall therefore confine myself to the following particulars, which appear to deserve a special notice:

1. When the streamers rise high and approach the full moon, a luminous circle of from 20° to 30° is frequently formed around it; the circle continuing for a time, and then disappearing.

2. When the streamers extend to the zenith, or nearly so, they sometimes resolve themselves into small, faintly luminous, and cloudlike patches of a milk-white colour, and which not unfrequently continue to be visible on the following day, in the shape of white wavelike clouds.

3. We often saw on the northern horizon, below the auroral light, dark blue clouds, which bear a great resemblance in colour and form to the vapours which usually rise from a sudden break in the ice of the sea.

4. Even during the most brilliant auroras we could never perceive any considerable noise, though in such cases we did hear a slight hissing sound, as when the wind blows on a flame.

5. The auroras seen from Nisne Kolymsk usually commence in the northeastern quarter of the heavens, and the middle of the space which they occupy in the northern horizon is generally 10° or 20° east of the true north. The magnetic variation at this place is about 10° E.

6. Auroras are more frequent and more brilliant on the seacoast than at a distance from it: the latitude of the place does not otherwise influence them. Thus, for example, it would seem, from the accounts of the Tschuktschi, that in Koliutschin Island (in 67° 26′ latitude), auroras are much more frequent

and more brilliant than at Nishne Kolymsk, in latitude 68° 32′. On the coast we often saw the streamers shoot up to the zenith, whereas this was rarely the case at Nishne Kolymsk, nor was the light nearly as brilliant.

7. The inhabitants of the coast affirm, that after a brilliant aurora they always have a strong gale from the quarter in which it appeared: we did not observe this to be the case at Nishne Kolymsk. The difference, however, may proceed from local circumstances, which often either prevent the sea-winds from reaching so far inland, or alter their direction; for example, it often happens that there is a strong northerly wind at Pochodsk, seventy wersts north of Kolymsk, while at the latter place it is southerly.

8. The finest auroras always appear at the setting in of strong gales in November and January; when the cold is very intense they are more rare.

9. A remarkable phenomenon which I often witnessed deserves to be noticed, *i. e.*, when shooting stars fell near the lower portion of an auroral arch, fresh kindled streamers instantly appeared, and shot up from the spot where the star fell.

From some of the above remarks, it may be inferred that the freezing of the sea is connected with the appearance of auroras. Perhaps a great quantity of electricity may be produced by the suddenly-rising vapours, or by the friction of large masses of ice against each other.

The aurora does not always occupy the higher regions of the atmosphere, but, on the contrary, it is usually nearer the surface of the earth; and this is shown by the visible influence of the lower current of the atmosphere on its beams. We have frequently seen the effect of the wind on the streamers as distinctly as on the clouds, and it is almost always the wind which is blowing at the surface of the earth.

THE END.

F.S

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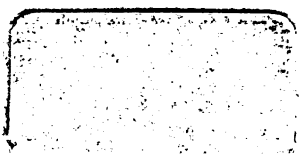
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